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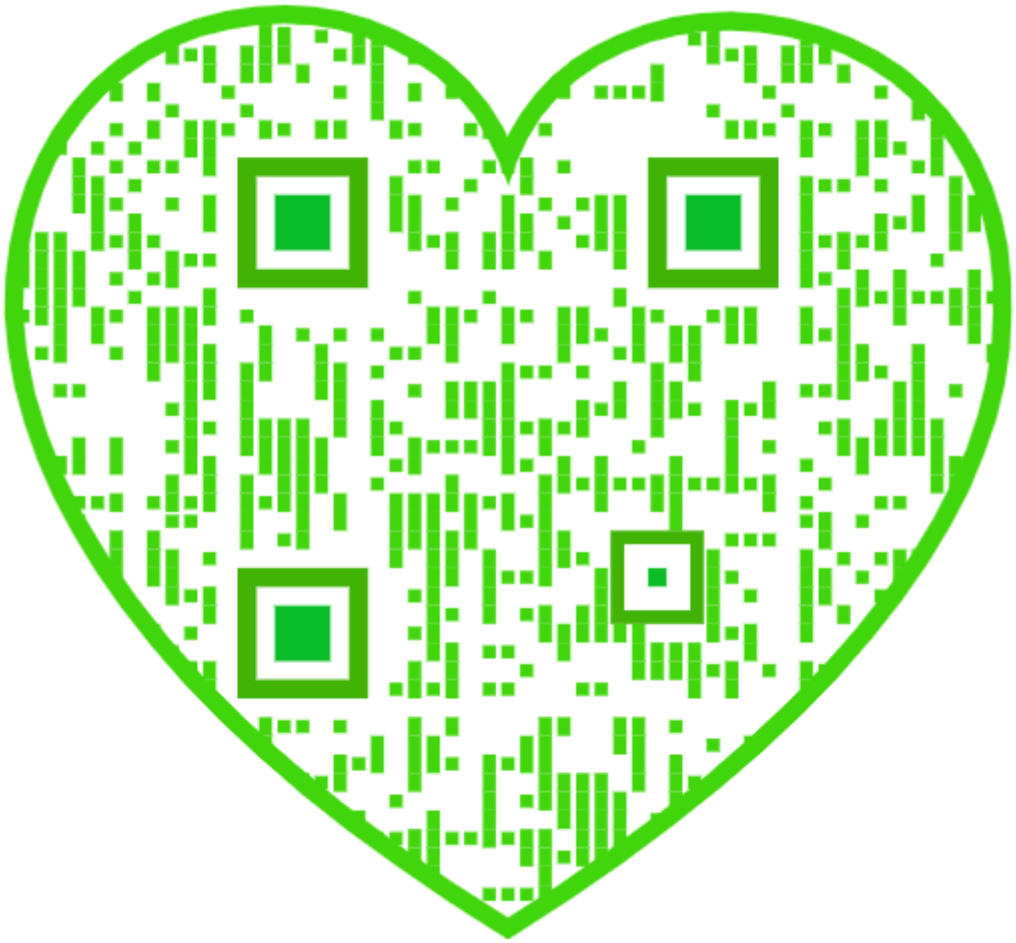

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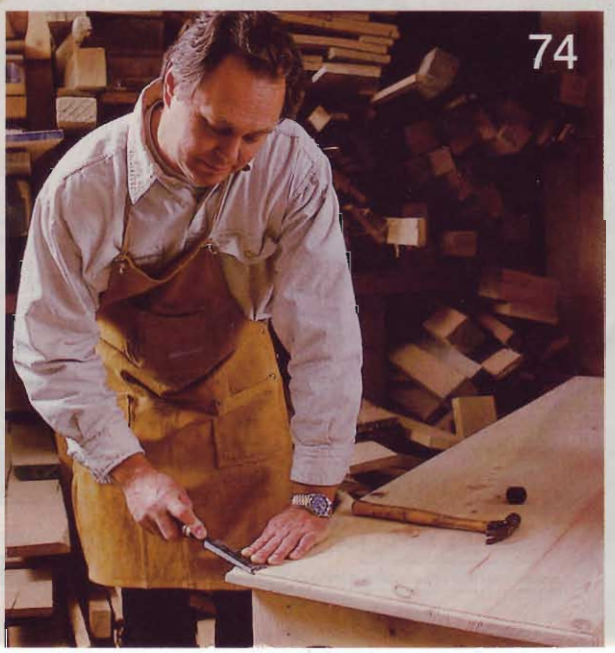

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Cover photo: **Andy Lyons**

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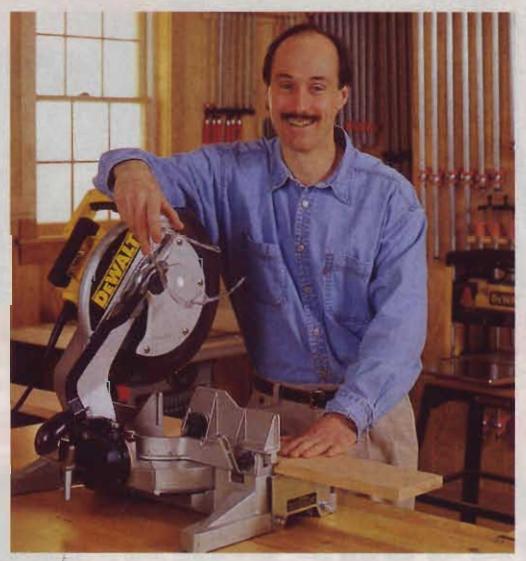
Turn your shop ideas into free tools



It's been said that the best things in life are free, and I certainly can't argue with that. Especially when those free things are power tools. That's why I'm so thrilled to tell you about our latest contest. DeWalt Industrial Tool Company has teamed up with *WOOD*® magazine to sponsor the first-ever GREAT AMERICAN WORKSHOPS CONTEST™. Winners in various categories will share in $10,000 worth of tool prizes. And, you'll love this part: All you need is a workshop, camera, pen, and paper to enter. If you have a shop-smart safety idea, original workbench design, problem-solving organizer, or just a great all-around workshop, you may have what it takes to win.

Sound easy? It is. As you'll see in our contest rules on *pages 24* and *25*, there are **eight ways to win,** eight categories from which to choose.

Now, I and the rest of the crew at *WOOD* can't enter, but I would like to share with you a few insider tips that might help your chances. First, take a minute or two to ensure that your photos are well-composed, focused, and lit properly. Remove any clutter that might distract from the object you're showing off—that will earn you points with the judges. Make your write-up short, but clear and complete. If your handwriting is as hard to read as mine, type your letter. Let us know how your shop, storage solution, workbench, or idea helps you work more efficiently and effectively every day. Then mail these in, along with the completed entry form. That's it—you're done.

For its part, contest sponsor DeWalt Industrial Tools will provide $3,000 worth of tools to the winner of the Best Overall Shop category, and $1,000 in tools to each of the winners of the seven remaining categories. You might even become famous because we'll feature the winners in our March 2002 issue.

Just remember, the entry deadline is October 1, 2001. That gives you plenty of time to showcase your best stuff.

To all of you, the very best of luck. I can't wait to see what you send in.

Bill Krier

Better Homes and Gardens®
WOOD®

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talkingback

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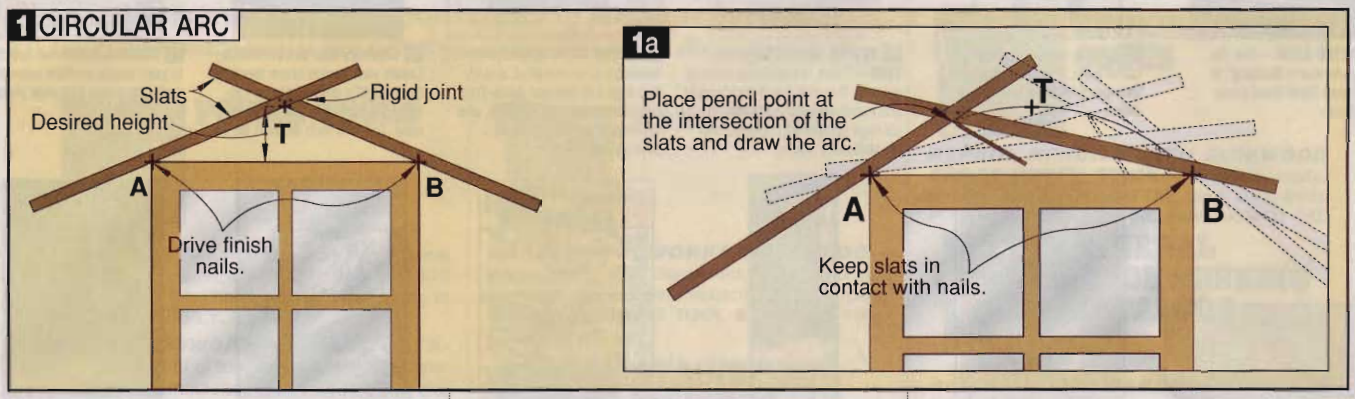


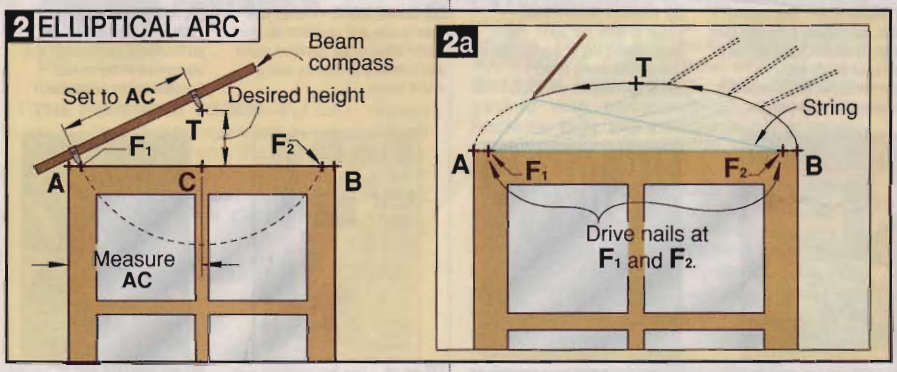
The ins and outs of arcs

In issue 126, you gave Garry Liberty of Quebec a simple method for drawing an arc over a window or doorway. It seemed to me that he was asking for a circular arc; you gave him a solution for an arc that is best compared to the elastic line formed by a beam being bent by a single, centered load. This arc differs slightly from a circular one, and to be symmetrical, the wood strip used to draw it must be homogeneous over its entire length.

To draw a circular arc, drive finish nails at points A and B. Mark your desired height at point T midway between A and B. Place two slats along lines AT and BT, making a rigid joint at T, as shown in Drawing 1. Place your pencil point at the slats' intersection and, sliding the slats on the finish nails, draw the arc, as shown in Drawing 1a.

Another pleasing curve to use is an elliptical arc. To draw this arc, find the centerpoint C, and mark your desired height at point T. Measure line AC. Set your compass to this dimension and swing an arc from T to intersect line AB at the two focal points, F_1 and F_2, as shown in Drawing 2. Drive finish nails at F_1 and F_2. Tie a piece of non-stretching string at F_1, loop it over a pencil point held at T and, pulling it tight, tie it off at F_2. Now, keeping the string tight, let it guide your pencil as you draw your elliptical arc, as shown in Drawing 2a.

—Klaas Oterdoom, Bentveld, Netherlands



The key to the drawer-lock bit review

In the drawer-lock router bit review in issue 129, the illustration showing the router table setup is correct, but Step 3 of the instructions doesn't agree. It should read, "Position your router table fence that distance back from the *upper* cutting edge of the bit."

—Ray Williamson, Peterborough, Ont.

Touché, Ray. Incidentally, many readers have asked where they can buy this bit.

Almost every router-bit manufacturer makes a drawer-lock bit, but you aren't likely to find one at your local home center or hardware store. Look for a woodworking machinery dealer under Tools-Electric in your Yellow Pages. You also can mail-order these bits directly from manufacturers, or through major woodworking-supply catalogs. (MLCS offers its Katana drawer-lock bit no. 18850 for $39.00. Call 800/533-9298.)

Better advice on poor-fitting drill-press taper

The solution for a poor-fitting drill-press chuck Morse taper suggested by reader John Graber on page 8 in issue 131 won't work. These tapered arbors have a drive tang on the end that mates with a slot at the top of

Continued on page 12

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Coin map plaques cost more than expected

Readers who wish to order the brass-finish plaque for the "Our Country in Quarters" coin map featured in issue 131, please note that we need to up the cost from $3.00 to $5.00 each to cover unanticipated costs in manufacturing.

You still need to send a self-addressed, stamped envelope. Please send a separate self-addressed, stamped envelope for each plaque ordered. The address is the same; WOOD magazine Coin Map, 1716 Locust Street GA-310, Des Moines, IA 50309-3023. We apologize for any inconvenience.

the tapered recess in the drill-press quill. The tang engages its slot well before the tapers make contact, making it impossible to lap the chuck arbor in the quill. Try replacing the arbor instead. The Morse-taper arbor on a chuck is a separate piece that is press-fit into the chuck body. To replace it, open the chuck all the way and support it, arbor down in an open vise. Use a punch or a piece of rod and a hammer to drive the arbor out. Purchase a new one of the same size, and reseat it using a wood block to cushion the hammer blows.

—Kenneth Pleger, Capac, Mich.

Thanks for your input, Kenneth. If you can't find them locally, Grizzly Industrial, 800/523-4777, and Woodworker's Supply, 800/645-9292, sell chucks and Morse-taper arbors. Woodcraft, 800/225-1153, sells the TaperMate Morse taper cleaner. Call for catalogs.

The spin on saw blades

In your article on tablesaw safety in issue 128, you state that a blade whirling at 8,000 rpm should instill caution, but not fear. This saw you refer to would instill both caution and fear in me. Neither of my tablesaws, nor others of which I am aware, turn at this speed. Generally speaking, anywhere from 3,000–4,000 rpm is the norm. All my blades have recommended speeds well under 8,000 rpm.

—John Bakes, West Vancouver, B.C.

You're right, John, 8,000 is not rpm; it is fpm (feet per minute), a measure of the speed of the blade's teeth as they come around the bend.

To put this in units we all understand, we did the math. The average under-load speed of the seven tablesaws we tested in issue 128 is 3,428 rpm. At this rotation, the teeth of a 10" blade are traveling at 102 mph for Americans, or 164 kph for our Canadian neighbors.

Desert dustbin has a one-armed cactus

A reader called to tell us that one of the patterns for the Desert Dustbin in issue 132 is incomplete. The cactus on the desert scene panel has only one arm, and the row of lacing holes along one edge is missing. We've reprinted this part of the pattern on *page 86*. You can make a copy of the page and mate it to your existing pattern. We apologize for the inconvenience.

Write Us!

We welcome your comments, criticisms, suggestions, and yes, even compliments. Please write to: **Talking Back, WOOD Magazine, 1716 Locust St., GA310, Des Moines, IA 50309-3023** or email us at **talkingback@mdp.com**

We select and publish only letters of the greatest benefit to our readers.

fail-safe router jig

A specialist at through or stopped dadoes and grooves

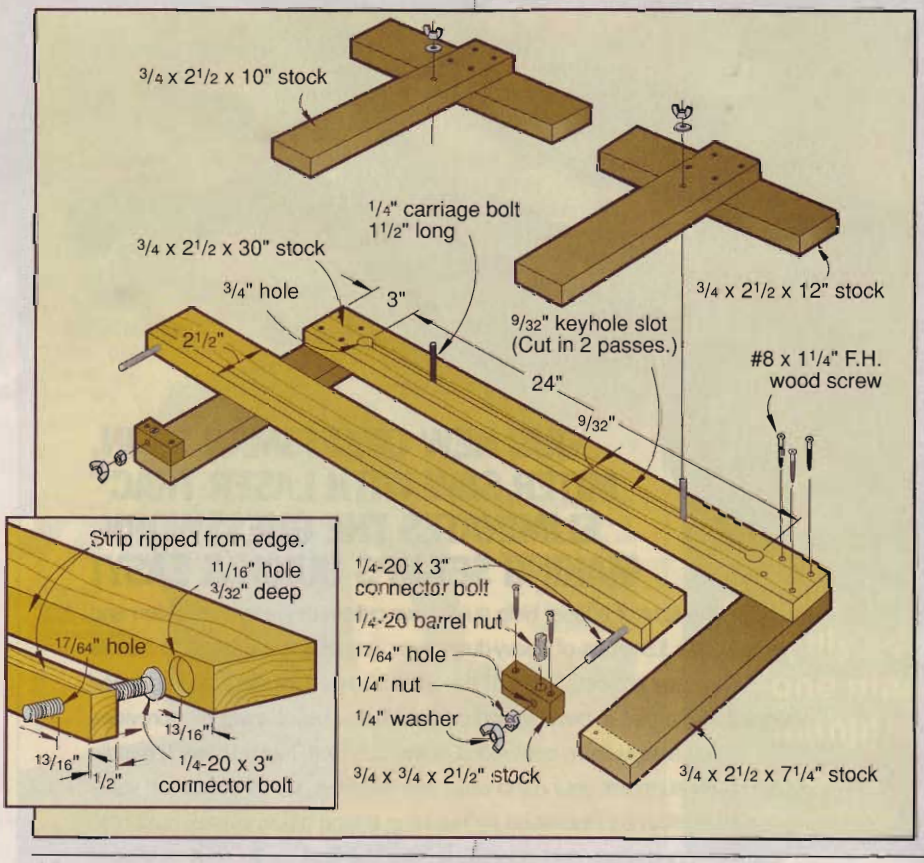
There are only a few things that can go wrong when you're routing dadoes for shelves. Unfortunately, most of them ruin the job, so one of our free-lance craftsmen, Erv Roberts, designed a router jig that's easy to align and cuts the exact thickness of the shelf. Best of all, the router can wander away from the fence while you're working—without ruining the job.

The secret is a flush-trimming pattern bit with a bearing above the cutters. As you guide the bit along a fence, the cut is directly below the bearing—one edge of the cut automatically falls exactly along the front of the fence. Erv's jig uses a router bit narrower than the dado you need, but has two fences. If your router wanders away from one, the other keeps you from routing outside your layout lines.

Begin by laying out both sides of the dado. Clamp the jig's fixed fence over one of the layout lines, then slip the shelf stock between the fixed and movable fences. Turn the wing nuts to snug the movable fence against the stock, and clamp it in place. To make the cut, guide the bearing along one fence, then the other, traveling clockwise. To make a stopped dado, use the optional stops.

Most of the jig screws together. Make the movable fence from two pieces, as shown in the detail. Slip the bolts through the holes in the narrow piece, then glue the two pieces together. To form the shouldered keyhole slot in the fixed fence, drill the ¾" end holes, then rout the 9/32" slot with a ¼" bit chucked in your table-mounted router. Now, centering a ¾" bit on the end holes, rout a 3/16"-deep shoulder in the fence's bottom face. The end holes let you add and remove the stops without taking off the wing nuts.

Do you need to rout a dovetail or key-hole slot? Simply install a guide bushing in your router subbase, and adjust the movable fence to the bushing's diameter.



Written by **Jeff Day**
Project Design: **Erv Roberts, Des Moines, Iowa**
Illustrations: **Roxanne LeMoine; Lorna Johnson**
Photograph: **Baldwin Photography**

Connector bolts (3" length no. 06K90, $4.50/10 pack) and cross dowel (no. 06K70, $2.50/10 pack) are available from Woodcraft. Call 800/225-1153. Pattern bits are available from Eagle America in various sizes. Call 800/872-2511 for a catalog.

woodforum

Answers to your questions from letters, e-mails, and WOOD ONLINE®

Raise panels with a tablesaw or router?

Q I'm about to make my first set of raised panel doors. What's the best way to go about it? I have read how to go about it on a tablesaw using a jig. Or would it be best to spend the big bucks for a panel-raising router bit set? I have a Hitachi MV12 3hp router.

—Dennis McFiggins, Brockport, N.Y.

A I have cut raised panels both ways, tablesaw and router bit. I was satisfied with the tablesaw panels, but the clean-up sanding was tedious. So I bought a 3½" diameter CMT bit. I have the same router that you do and it works great. I run the router at its lowest speed (8,000 rpm) for safety and to reduce tearout. I run each panel over the bit at least six times, taking a small amount of material with each pass.

—Jack Francis, Geneva, Ill.

A For a thorough look at the different methods of raising panels, check Issue 62, August 1993. Call 800/346-9663 to order a copy for $6.95.

—WOOD® magazine

A If you want different profiles than just plain flat panels, I would go with the bits. Also, the raised-panel bits are supposed to reduce the amount of finish sanding you have to do. I have used the tablesaw on several projects and really got great results. Once you are set up, it is amazing how fast you can do panels. On one project, in two hours I set up the tablesaw, raised the panels, and had the finish sanding done on 10 good-sized panels. It would have been about the same if I had used raised panel bits, because you probably would need to run every piece through three or four times and still go back and do some touch-up sanding.

—Bill Schreiber, Litchfield, N.H.

Intarsia with a bandsaw?

Q Has anyone tried doing intarsia with a bandsaw? All I have is a small scrollsaw, and I can never follow the lines due to vibration.

—Sid, WOOD ONLINE

A I have done several intarsia pieces on a 10" benchtop bandsaw with a very small blade on it, and they were quite acceptable. I think the sanding is more critical than the method of cutting.

—Robert Zink, Grand Haven, Mich.

A Yes, use a ⅛" blade. Intarsia expert Judy Gale Roberts uses a bandsaw all the time.

—William Beatty, Haliburton, Ont.

How do you clean big sanding belts?

Q I am looking for information about cleaning sanding belts, particularly for wide drum sanders.

—Duane Pulliam, Chatham, Ill.

A Performax product manager Warren Weber offers a couple of options, Duane. If your belt has a resinous build-up that can't be removed with a rubber cleaning stick, soak it for a few hours in a couple of ounces of household cleaner mixed with a quart of water. Or, go the heavy-duty cleaning route with a 50/50 mixture of mineral spirits and lacquer thinner. Obviously, the latter mixture is quite volatile, so cover the container and keep it in a safe place. Whichever method you choose, finish up by scrubbing the face of the belt with a stiff nylon brush. A couple of cautions: Soaking is appropriate for polyester- or cloth-backed belts, but not for those with paper backing. And if your drum-sander belt has a Velcro backing, you might find debris from the face side lodging on the back. Finally, Weber suggests wrapping your belt in the opposite direction when you re-install it. You'll extend the useful life of its abrasive particles.

—WOOD magazine

Continued on page 18

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How to position a router table track

Q I'm building a router table with the router plate in the center of the top. How far should the miter track be from the plate or the bit?

—Pete Brown, Oxford, Md.

A Get it as close to the bit as you can, while still allowing your miter gauge to pass. Put your largest bit in your router, then place your miter gauge directly in front at a point where it will clear the bit. That should tell you about where to cut the slot.

—Kevin Roberts, Katy, Texas

A I just placed a commercial rack in my shop-built router table about 3" from the front of the table. As long as the miter gauge and all of your jigs clear the bit, you should have no problems.

—Rodney Stone, Woodstock, Ga.

A I installed a track and used it about three times. Then I used a piece of lauan plywood about 9×12" for a sled, and attached a piece of scrap across the narrow dimension, square to the edge, to serve as a sled fence. I mounted a hold-down clamp on that fence. Place the long edge against the router fence, clamp your stock against the sled fence, and rout away. It works great.

—Randy Walker, Atlanta, Mo.

How does ash compare to oak?

Q Our local hardwood mill folks mentioned that they would be sawing and kiln-drying some ash soon. This got me to thinking about using some of it on my next small project—making a frame to hold 400 name badges for our church. I've worked mostly with red oak. Is ash anything like red oak for resawing, jointing, planing, and routing?

—Chuck Hosler, Onalaska, Wis.

Continued on page 20

A Chuck, white ash is a fine substitute for red oak in indoor projects. Note, however, that its extreme hardness makes it susceptible to burning from blades and bits. It has a tendency to chip when you use a router, too. To check out other species' characteristics, log on to www.woodmagazine.com, and click on "Wood Profiles" under the *WOOD*® magazine button.

—WOOD *magazine*

Tablesaw blades take the low road

Q I've read different theories about the proper height for your tablesaw blade. Some woodworkers say it should extend just slightly higher than the workpiece, for safety reasons, and some say it should be quite a bit higher, so that the front teeth cut down on the wood. I usually set my blade so

that five to seven teeth show above the wood. What's the best method?

—*John Bissell, Lampe, Mo.*

A John, we took your question to Roger Cliffe, who wrote *Table Saw: Workshop Bench Reference*. The ideal, according to Roger, is to set your blade so that three to five teeth are in the wood at a time and no more than ¼" protrudes above the workpiece. When you move from thin to thicker stock, switch to a blade with fewer, bigger teeth to follow this rule. Use a 24-tooth blade to rip a 2×4, for example.

This method minimizes friction and also reduces the chance of accidentally contacting the exposed portion of the blade with your hands. Another problem with raising the blade up high is that you're putting a much wider section of the blade inside the wood. That increases the likelihood of kickback if the workpiece twists slightly on its path across the saw.

—WOOD *magazine*

Got a question?

If you're looking for an answer to a woodworking question, write to: **WOOD Forum, 1716 Locust St., GA 310, Des Moines, IA 50309-3023** or e-mail us at **woodforum@mdp.com**. For an immediate answer to your question, get help from fellow woodworkers by posting it on one of our Internet discussion groups at: **www.woodonline.com**.

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VISIT THE TOOL CRIB

new Miter 5000 sled
revels in Incra-think

As if three Incra miter guides weren't enough, Taylor Design has added yet another crosscutting accessory to its lineup. But the newest addition—the Miter 5000 sled—may be their finest offering yet.

Like Incra's Miter 3000 protractor-style guide, which we reviewed in *WOOD®* magazine issue 133, the Miter 5000 provides positive miter stops every ½° over a full 180° range. That's a total of 364 repeatable stops, a feat no other guide or sled can top.

In fact, the Miter 5000 sled is so rooted in the Miter 3000 guide that, if you leave out a few parts, you can make it into a 3000. But those extra parts make it well worth the additional money you'll pay.

For starters, you get a spacious 22×23½" melamine-coated, MDF sled base that can carry stock up to 25½" wide through the cut. Incra engineers also added a fixed right-side base to support the offcut piece and reduce tearout.

Following the manufacturer's instructions, we attached a miter bar to the right-side base, put the assembly in the right miter slot, and trimmed the excess base material by running it through the saw. We then positioned the base where shown in the photo *below left*, and using a hex-head wrench, tightened the expanding discs in the bar, locking the base in place.

The result is a low-friction, zero-clearance "catcher" for your cutoffs. If you need to make a bevel-cut on your right-tilting saw, you can easily remove the base. Or, Taylor sells spare right bases that you can bevel to match your most common cuts.

In addition to the sliding base, the Incra 5000 incorporates a fixed base (top of photo) to support the offcut for cleaner cuts.

On the fence

Another bonus of the Miter 5000 is its fence. Cut from the same extrusion as the Miter 3000 fence, this model boasts 32" of backup for your stock. Not enough for you? No problem, because the fence telescopes out to more than 64"—that's more than 4" longer than the Delta 36-205, which was the longest in our recent test.

When you're swinging that much fence from one end, you might worry about deflection. Incra engineers addressed that, as well, by adding an L-bracket that secures the fence to a T-track along the sled's outboard edge. (That T-track also accepts an optional hold-down clamp.) Our only complaint here is that you need a hexhead wrench to move the brackets; we'd like to see wing nuts or knobs to speed the process.

Because it borrows so heavily from the Miter 3000, the Miter 5000 shares one of its foibles as well. We found that we still had to be careful to make sure the secondary rack-and-pawl miter-stop system

ONE MORE CROSSCUT SLED FOR THE ROAD

MANUFACTURER/ IMPORTER	MODEL	LENGTH	MITER BAR: METHOD OF FIT (1)	MITER BAR: T-SLOT KEY? (YES, NO)	MITER BAR: FENCE LENGTH	MAXIMUM STOP LENGTH	CAPACITY (2): MAXIMUM MITER LEFT (DEGREES)	CAPACITY (2): MAXIMUM MITER RIGHT (DEGREES)	MITER SCALE: NUMBER OF POSITIVE STOPS	MITER SCALE: STOP STYLE (3)	PERFORMANCE RATINGS (4): FITTING MITER BAR TO SLOT	MITER SCALE CALIBRATION	MITER SCALE READABILITY	MITER SCALE ACCURACY	MITER STOP ACCURACY	CHANGING FROM LEFT SLOT TO RIGHT SLOT	ACCURACY OF FENCE STOP	WARRANTY (YEARS) (5)	COUNTRY OF ASSEMBLY (6)	WEIGHT (POUNDS)	SELLING PRICE (7)	COMMENTS
INCRA	Miter 5000	25 3/8"	ED	Y	36"	64"	90	90	364	RP	G	F	E	E	E	N/A	E	1*	U	20	$299	Expensive, but worth every penny for its accuracy, versatility, and ease of use.

NOTES:

1. (ED) Expansion discs
2. With sled in left miter slot.
3. (RP) Rack and pawl
4. E Excellent; G Good; F Fair
5. (*) Lifetime warranty on racks.
6. (U) United States
7. Prices current at time of article's production.

For specifications on other types of tools, click on "Tool Comparisons" at www.woodmall.com

For more information:

Taylor Design
www.incra.com
972/418-4811

(that gives you the ½° increments) was returned to the "zero" position before we made each cut.

If you're kicking yourself for buying the Miter 3000 guide when you could have had the sled, go easy. Taylor Design president Chris Taylor told us you can buy an upgrade kit to convert your Miter 3000 to a Miter 5000.

Would we buy one?

You bet. Although we still like the sheer simplicity (and comparatively low price tag) of the Dubby jig, the Miter 5000 gives you repeatability you won't find anywhere else—if you have the budget. It costs nearly $300. But for the money, we can't imagine you could ask much more of a crosscut accessory and get it.

Written by **Dave Campbell** with **Garry Smith**
Photograph: **Baldwin Photography**

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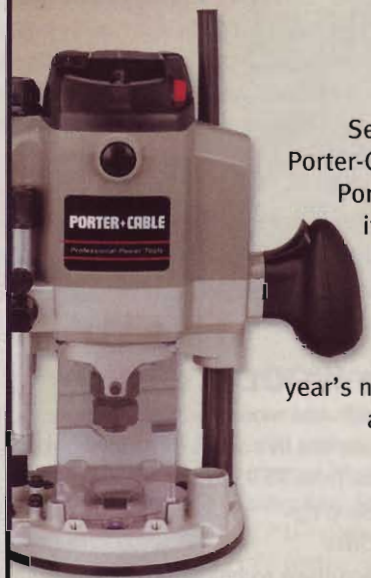

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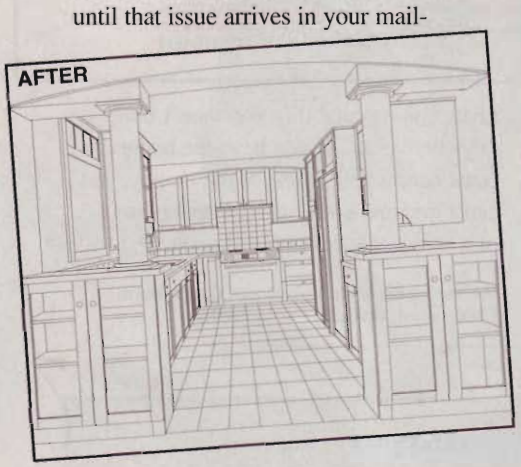
You've got to see this kitchen renovation

The October 2001 issue of *WOOD*® will feature a floor-to-ceiling overhaul of a kitchen, including articles on building and installing your own kitchen cabinets and countertops. But you don't have to wait until that issue arrives in your mail-



box. You can check on our progress through weekly Website updates beginning June 21. In addition to getting a glimpse of the work in progress, you'll find seminars on enlarging a brick window opening, installing a window, applying ceramic tile, laying down a vinyl-tile floor, and the decorative painting techniques of stippling and stenciling. www.woodmagazine.com/handhome/

Find out what tools other woodworkers rate tops

Ask any woodworker how they feel about a particular type or brand of power tool, and you're likely to get some strong opinions. Now, open up that discussion to thousands of woodworkers from around the world, and watch the fur fly! You can join in the fun in several ways. To pose a question about any tool, respond to someone else's query, or just sound off about a tool experience, go into the "Tools and Tool Buying" discussion group at http://talk.woodmagazine.com/

On the bottom of that same page you'll find individual tool-review groups in which your fellow readers post their reactions to the most-recent *WOOD* magazine tool reviews.

Get your hands on *WOOD's* best stuff

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Go to http://woodstore.woodmall.com and click on *WOOD* Books in the left-hand column.

GREAT AMERICAN WORKSHOPS CONTEST

CONTEST RULES

WOOD® Magazine and DEWALT's Great American Workshops Contest

1. NO PURCHASE NECESSARY TO ENTER OR WIN.

2. For Workshop entries: Send in completed entry form along with 6-8 quality, color photographs, no smaller than 3x5", of your workshop showing the overall view of the layout, as well as any special areas. Include a shop overview sketch of the floor plan that shows power tools, workbench, and storage areas. Provide the rough overall shop dimensions. Spaces, workbenches, organizers, etc. must appear clutter-free in the photos for proper presentation.

Also include an explanation (50-250 words) of how and why your shop design works for you. You may cover such topics as climate control, lighting, dust collection, efficiency, organization, storage, accessibility, safety, special touches, etc. Specify whether the shop is a basement, garage or dedicated outbuilding workshop.

For Organizer, Workbench and Safety categories: Include two color photographs, no smaller than 3x5", clearly showing category subject plus a 50-100 word explanation of the subject that focuses on function and importance to the operation of the shop. A dimensional sketch may also be submitted.

3. Entries must be received by October 1, 2001. All entries must be postpaid; collect entries will be refused. You may enter as many categories as you wish but a separate entry form and separate set of photographs are required for each entry. Entrant's shop design must be original.

4. Entries, including photographs, become property of WOOD Magazine and DEWALT Industrial Tool Company and will not be returned. Entries must be work completed by entrant and not previously published or entered in any other contest or have won any other awards.

5. The sponsors are not responsible for illegible, lost, late, misdirected, damaged, delayed or stolen entries. Entry constitutes permission to use winner's name, hometown, entry and photograph of self and shop for editorial and promotional purposes by sponsors, unless prohibited by law. Employees and immediate family members of Meredith Corporation and DEWALT and their affiliates and subsidiaries are ineligible. Open to U.S. and Canadian residents (except Quebec), 18 years and older. Subject to all U.S. federal, state and local laws and regulations. Void where prohibited.

6. A panel of judges from Meredith Corporation and woodworking experts will judge all entries based on overall organization of shop, safety of floor plan, completeness of shop and arrangement of tools on or about October 1, 2001. Winners will be selected and notified by mail on or about October 31, 2001. All decisions of the judges are final.

7. The following eight (8) prizes will be awarded:

a. Best Overall Shop - $3,000 worth of DEWALT Tools

b. Best Shop Utilizing DEWALT Tools - $1,000 worth of DEWALT Tools

c. Best Professional Woodworker (one-man) Shop - $1,000 worth of DEWALT Tools

d. Best Original Workbench Design - $1,000 worth of DEWALT Tools

e. Best Storage Solution or Organizer for One or More Portable Power Tools - $1,000 worth of DEWALT Tools

f. Best Storage Solution or Organizer for Power Tool Accessories (Drill Bits, Blades, Sandpaper, etc.) - $1,000 worth of DEWALT Tools

g. Best Storage or Organizer solution for Hardware - $1,000 worth of DEWALT Tools

h. Best Original Workshop Safety Idea (Must be able to represent idea by photo) - $1,000 worth of DEWALT Tools.

The aggregate retail value of all prizes offered in connection with this contest is U.S. $10,000. The value of each individual prize is based on the item's current retail price as set forth by DEWALT's suggested list price and will be provided to the selected contest winners. The odds of winning will depend upon the number and nature of the eligible entries received.

8. Winners are responsible for applicable taxes. Winners will be required to complete an Affidavit of Eligibility, Ownership and Liability/Publicity Release and Selection Form within 14 days of notification or an alternate winner may be selected. Prizes are non-transferable and [there is] no substitution or exchange for cash in lieu of [any] prize. Winners should allow 4-6 weeks from DEWALT's receipt of their Selection Form for delivery.

9. Photos of winners and their shops may be published in the March 2002 issue of WOOD. For a list of winners, send a separate self-addressed stamped envelope after December 1, 2001 to "Great American Workshops," 1716 Locust Street (GA 310), Des Moines, IA 50309-3023.

shoptips

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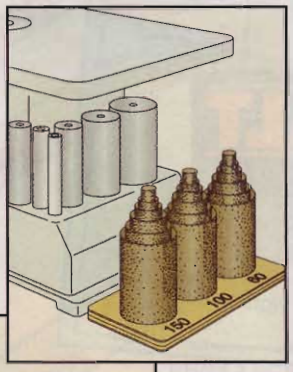
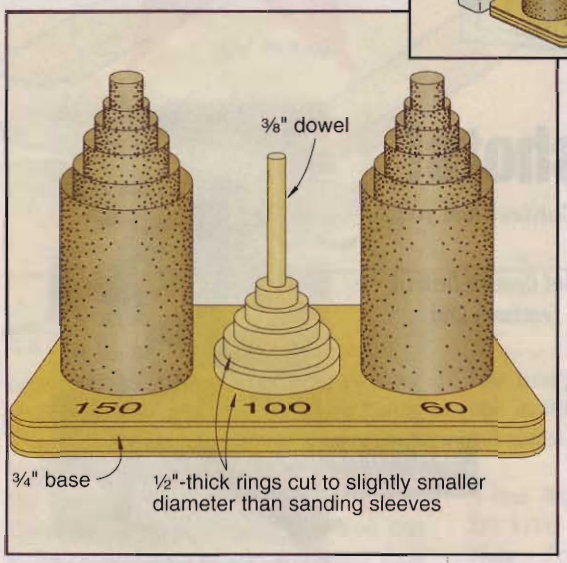
top shop tip

Stacker stores sanding sleeves

When I bought my oscillating spindle sander, I didn't consider how to store six different sizes of sleeves in three grits. They fit inside one another, but I couldn't grab a middle size without dumping them all out.





To organize my sleeves, I cut three rings for each diameter of sanding sleeve from ½" stock, each ring slightly smaller than the sanding sleeve it will hold. I then stacked them layer-cake fashion, topped off each stack with a ⅜" dowel rod, and glued the three stacks to a base.

I slipped the sleeves over the rings, and put the holder next to my sander. Now I can quickly grab any of 18 different sanding sleeves without fumbling or dumping.

—Larry Apps, Syracuse, N.Y.

top shop tip winner

Larry Apps' life has been a series of fulfilled fantasies: As a kid, he dreamed of driving a fire truck, and for 21 years, he did just that for the Syracuse, New York, fire department. Then he dreamed of an early retirement, and accomplished that at age 45. These days, Larry also lives a dream—woodworking whenever he wants. Does he work in a dream shop? "Hardly," he says. "Seems like I've got every tool known to man and no place to put it." That need, and his solution, at *left*, earned him this issue's Top Shop Tip honors.

As our thanks for sending in this issue's Top Shop Tip, Larry receives a Craftsman router table (model 26464). Great job, Larry!

Share a tip, win a tool!

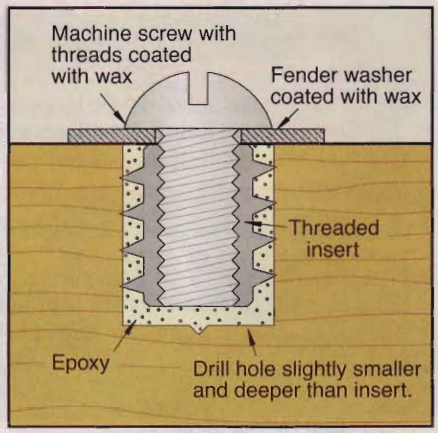
We pay $75 for each original tip we publish, and the person who sends in the Top Shop Tip also wins a tool prize worth at least $250. Send your tips, along with drawings or photographs and your daytime phone number, to: **Shop Tips, *WOOD*® Magazine, 1716 Locust St., GA-310, Des Moines, IA 50309-3023.** Or, post them on our Top Shop Tip discussion group at www.woodonline.com. Sorry, but we can't send back your tips.

Hold the drill presses! Here's another way to set threaded inserts

Threaded inserts are awfully handy for shop jigs and knockdown furniture, but frankly, they're difficult to thread into solid wood. Even using a drill press to start them can be tricky. Here's a method I like to use.

Start by coating a fender washer, and the threads of a machine screw that fits into the insert, with wax. Slip the screw through the washer and thread it into the insert.

In your workpiece, drill a hole a little deeper and slightly smaller than the insert so that the threads will just catch in the hole, as shown *above*. Now, put a dab of epoxy in the hole and drive the screw and insert into the workpiece. After the epoxy sets, back out the screw.


Machine screw with threads coated with wax
Fender washer coated with wax
Threaded insert
Epoxy
Drill hole slightly smaller and deeper than insert.

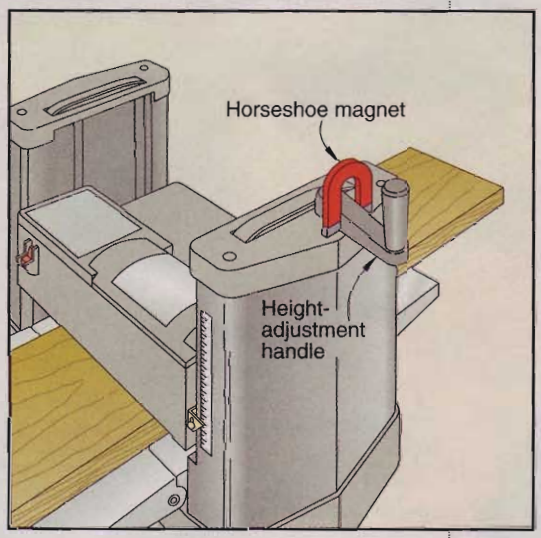
—Jim Downing,
WOOD® magazine senior design editor

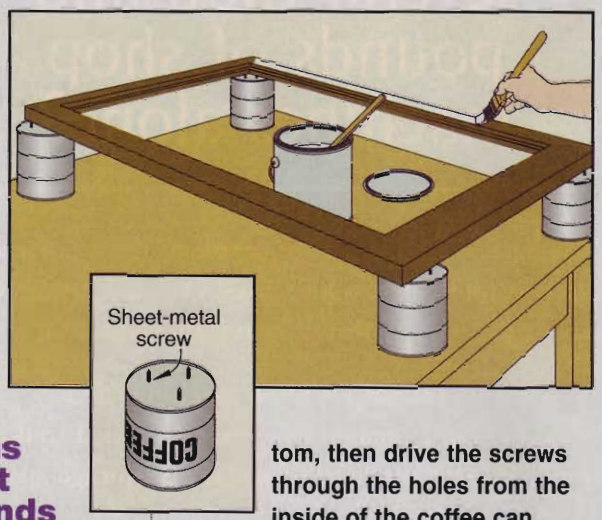
Continued on page 28

Horseshoe magnet kicks cutterhead creep

I enjoyed reading Paul Lonergan's tip for stopping cutterhead creep on his Delta 22-540 planer in Issue #123. Instead of using a clamp, I place a U-shaped horseshoe magnet over the planer's height-adjustment handle, as shown *below left.* It holds the handle firmly in place, yet can be removed easily to adjust the cutterhead.

—Jerald Holland, Austin, Minn.





Coffee cans make great second hands

To finish both sides of a project at one setting, I support it on empty coffee cans fitted with sheet-metal screws that protrude from the bottoms, as shown *above right.* Simply poke holes in the can bottom, then drive the screws through the holes from the inside of the coffee can.

After coating one side of the project, I turn it over and rest it on the screw points to complete the job. Although the screw marks seldom show, coating the "best" side last ensures a mark-free job.

—Frank J. Bober, Pine City, N.Y.

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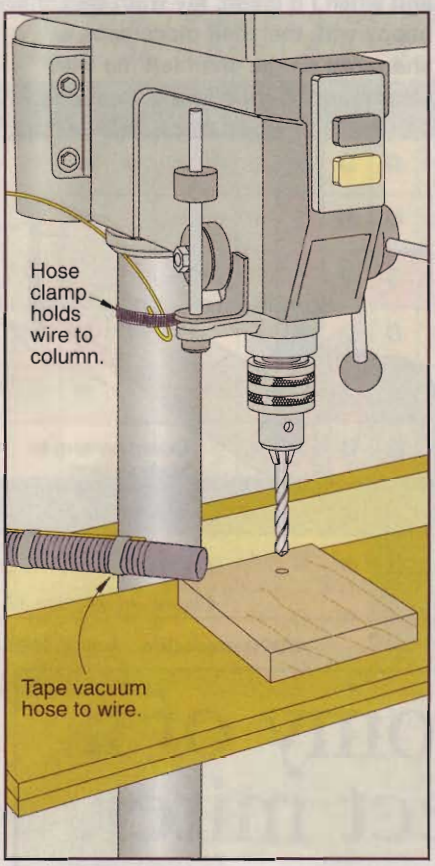
I like to beat dust and wood chips by capturing them right at the source. So



I built the flexible drill-press dust-collection system, shown *above*, with a few feet of heavy-gauge electrical wire and a jumbo hose clamp. (Look in the automotive or plumbing aisle at your hardware store.)

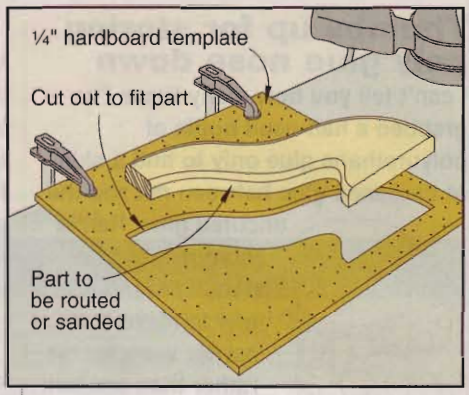
I found that solid-copper grounding wire offers the best combination of strength and flexibility, allowing me to easily position the hose's nozzle. You can use either insulated or bare copper wire.

—John Patrician, Abington, Mass., via WOOD ONLINE®

Hands-off sanding of shapely parts

When I need to sand small or odd-shaped pieces, I first trace the part onto a scrap of ¼" hardboard, then cut out its shape. Next, I clamp or screw the template to my benchtop, place the workpiece in the cutout, and sand it with my random-orbit sander. If you don't have a router table, you could use the same process to round over the edges of a hard-to-handle workpiece, provided it's thick enough that the router bit's pilot bearing clears the top of the template.

—Bob Weigel, Tucson, Ariz.



Continued on page 30

High Performance Router from Fein

This powerful new 3¼ horsepower plunge router will cut production time and give you a superior finish. Thanks to an advanced electronic feedback circuit, this state-of-the-art router operates at a consistent torque and speed for extremely smooth operation and a cleaner edge. It's lightweight for greater control, has a wider range of speeds, and includes soft start, dust collection port, and QC spindle. The new FEIN RT-1800 is designed for the cabinetmaker, solid surface fabricator and serious hobbyist. Call **1-800-441-9878** for more information and a dealer near you, or visit us on the web at **www.feinus.com.**

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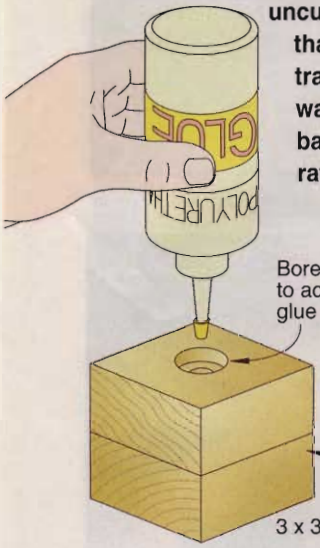
Fein

Circle No. 37

Thumbs up for storing poly glue nose down

I can't tell you how many times I've grabbed a half-used bottle of polyurethane glue only to find a skin of hardened glue between me and the uncured glue. Rather than getting frustrated, I found a way to make that barrier work for me rather than against.



I built a block, as shown at *left*, to hold my polyurethane bottle upside down when not in use. Air trapped inside rises to the top (now the bottom) of the container, so any barrier formed by the cured glue keeps the glue near the top of the bottle when it's upright, preventing further curing in the container.

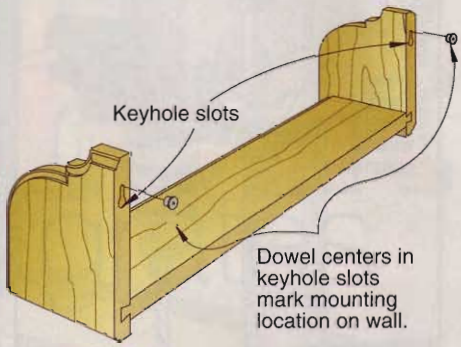
—Jan Svec, WOOD® magazine projects editor

Dowel centers mark the spot

My "honey-do" list recently included building some knick-knack shelves, and because they needed to be sturdy, I opted to hang them using keyhole slots. But I've never had much luck marking the screw-holes accurately on the wall.

About the time I was finishing up construction, I stumbled across my old dowel centers, and it dawned on me: These gadgets are perfect for locating the screws! I found a couple that fit the top of the keyhole slots, and when I (I mean, my wife) was happy with the shelf placement, a sharp rap on the shelf left me with clear marks for the screw locations.

—Mike Glennon, Weymouth, Mass.



Continued on page 32

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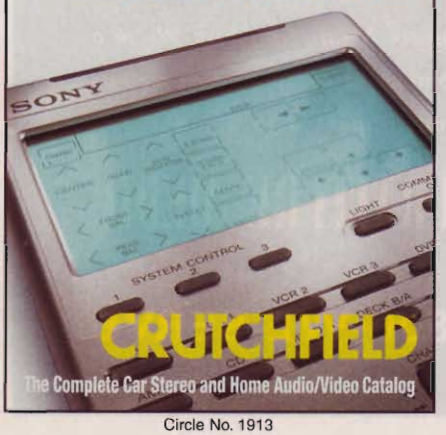


Circle No. 1913

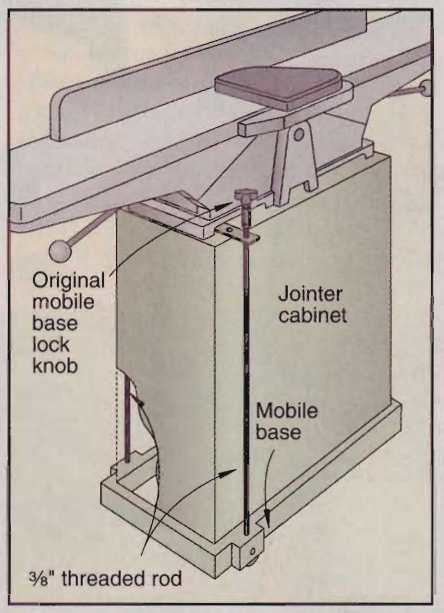
No headstands to lock that base in place

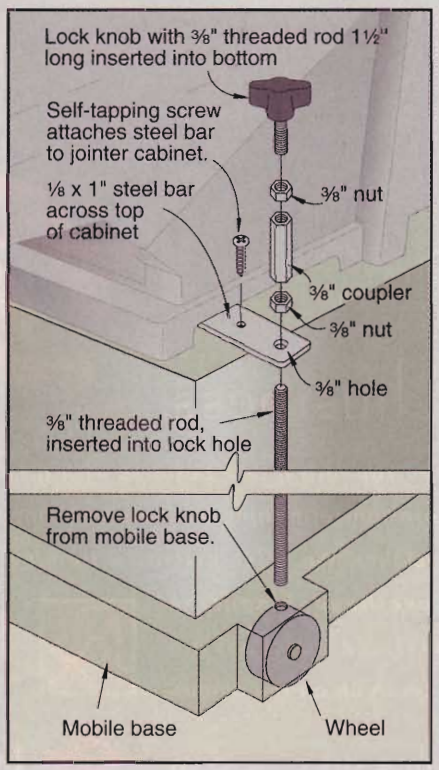
To eliminate bending over to lock the casters on my jointer's mobile base, I extended the factory locking knobs as shown *below*. Here's how.

In a steel bar the same width as the mobile base, I drilled holes slightly larger than, but spaced the same as, the knob holes on the mobile base. I then attached the bar to the jointer cabinet directly over the knob holes, using self-tapping screws.

I cut two lengths of ⅜" threaded rod that extend from the wheel to about an inch beyond the steel bar. After turning one end of the rod into the base's lock-knob hole, I put a jam nut and coupler onto the free end of the rod and a jam nut on the shaft of the factory locking knob. Finally, I threaded the factory knob into the coupler, as shown, and tightened the jam nuts against the coupler.

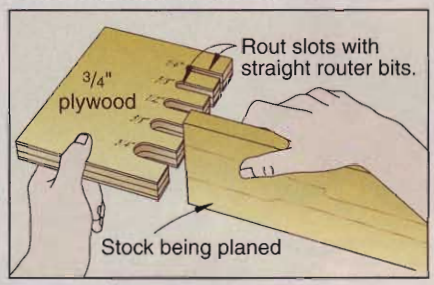
—Jan Svec, WOOD® magazine project editor




Lock knob with ⅜" threaded rod 1½" long inserted into bottom
Self-tapping screw attaches steel bar to jointer cabinet.
⅛ x 1" steel bar across top of cabinet
⅜" nut
⅜" coupler
⅜" nut
⅜" hole
⅜" threaded rod, inserted into lock hole
Remove lock knob from mobile base.
Mobile base
Wheel

Gauge prevents planing problems

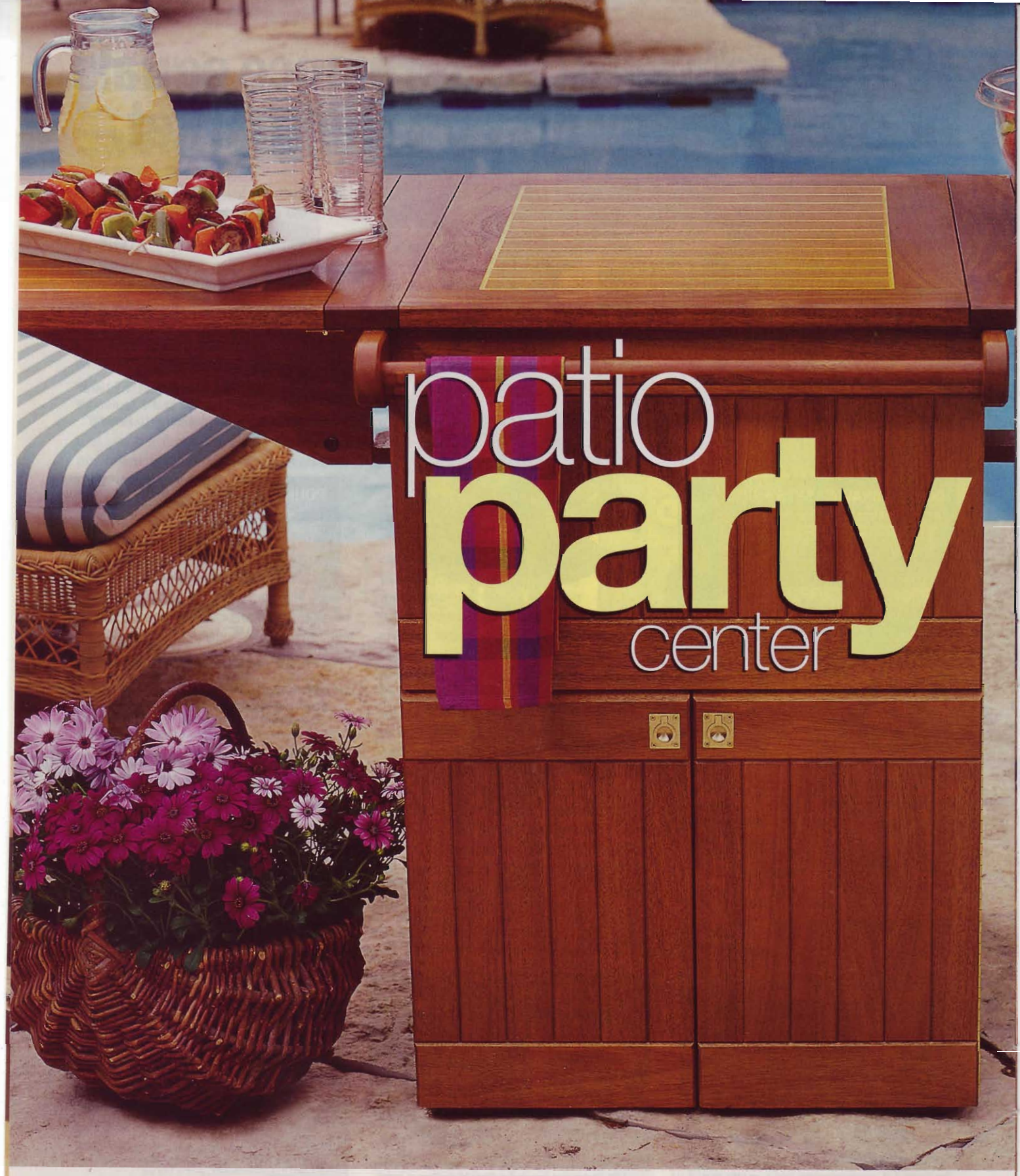
Anyone who has planed down stock to different thicknesses knows the frustration of planing material too thin. To prevent this, I created an accurate thickness gauge by routing and labeling ¼", ⅜", ½", ⅝", and ¾" notches in a piece of plywood. It's proved faster and more accurate than a ruler.



—Mark Liska, Manitowoc, Wis.

A few more tips from our woodworking pros

- Need dowels to match an exotic or unusual species of wood? Learn how to make them yourself in the Outdoor Serving Cart project on *page 34*.
- Router guide bushings and templates can help you mass produce pieces with identical cutouts or shapes. On *page 70*, see how we used them to make the wall plates.



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Tucked neatly beneath the hinged center lid is a mahogany-lined ice chest. With its four cubic foot capacity, you'll be able to keep plenty of refreshments on ice.

A mobile, weatherproof food and beverage server for your outdoor entertaining

Designed by Jim Downing, our Design Editor and resident boat builder, this deluxe outdoor server combines great looks with durable materials and construction techniques. To resist the weather, we've used a marine-grade wood finish and caulked the ice chest lid and drop-leaf table extensions just like a boat deck. And with our step-by-step instructions, you should have smooth sailing building it from beginning to end.

Start with the carcase, then build the drawers

1 From ¾" plywood, cut the drawer shelf (A), vertical panel (B), bottoms (C), back (D), sides (E), front panel (F), and drawer bottoms (K) to the sizes in the Bill of Materials. (We used A/B exterior-grade plywood.) Set the parts K aside.

2 Install a ¾" dado blade in your tablesaw, and cut the dadoes and rabbets in parts B–E, where shown on **Drawing 1**. It is not necessary to make stopped dadoes for the drawer shelf (A) and vertical panel (B). Cut these dadoes all the way across the back (D). The unused portions of these dadoes are either covered later or hidden from view.

3 Cut the skirt (G) to size, and form the arched cutout, as shown. Now glue and screw together parts A–G, assembling them in alphabetic order. Use clamps to hold the parts together while you drill screw pilot and countersunk shank holes. Remove the clamps from one subassembly after you drive the screws, and move on to the next assembly. Use an exterior-grade glue. (We used Titebond II.)

Note: *The skirt (G) protrudes beyond the bottom of the carcase so the cart sits level once the casters are installed.*

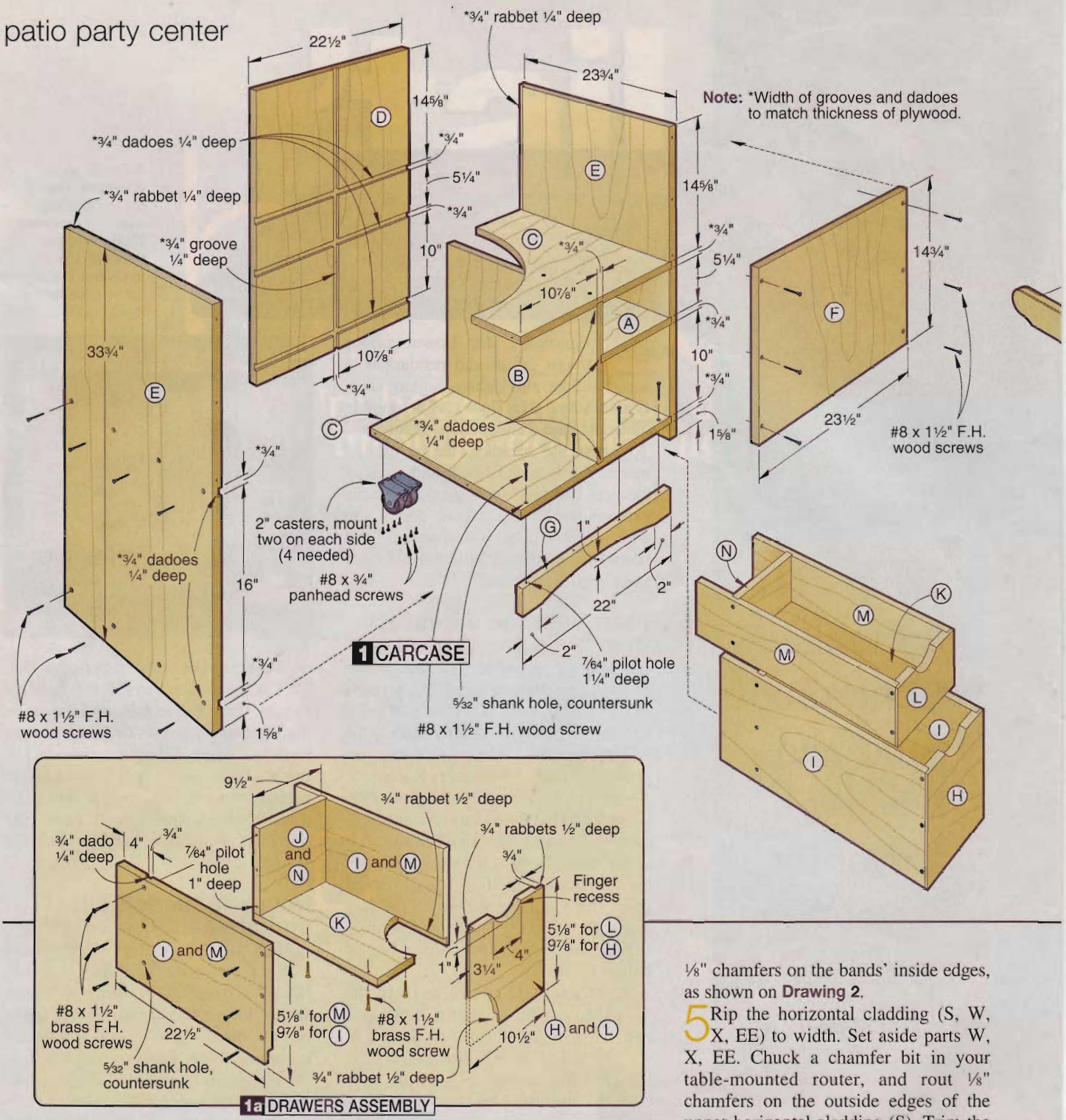
To apply even pressure, clamp plywood scrap over the cladding. Strips wedged between the carcase and the scrap apply pressure at the bottom.

4 Retrieve the drawer bottoms (K). Cut the drawer parts H, I, J, L, M, N to size. Form the rabbets and dadoes in the parts, as shown on **Drawing 1a**, then form the finger recesses in the drawer fronts. Glue and clamp the drawers together, drill the screw pilot and countersunk shank holes, and drive the screws. Remove the clamps, and set the drawers aside.

Now line the ice chest and sheathe the exterior

1 To make the ¼"-thick cladding and band pieces O–S, V–AA, CC–FF, NN, OO, rough-cut ¾" stock ¼" wider and ½" longer than the sizes listed. Make half the number of ¾" blanks as the parts quantities listed. Resaw and plane two ¼" pieces from every ¾" blank. Letter the pieces for later identification.

2 Cut the parts O to finish length, and all but four of them to width. Lay the carcase, front down on your workbench. Place 3/16"-wide spacers in the corners and fit 10 interior side cladding pieces (O) in place. Trim one of the four rough-width pieces to make a snug fit between the spacers. Remove the cladding, and lay out glue beads, as shown on **Drawing 2**. Clamp the cladding in place, as shown in **Photo A**. Make sure the ends of the Os are



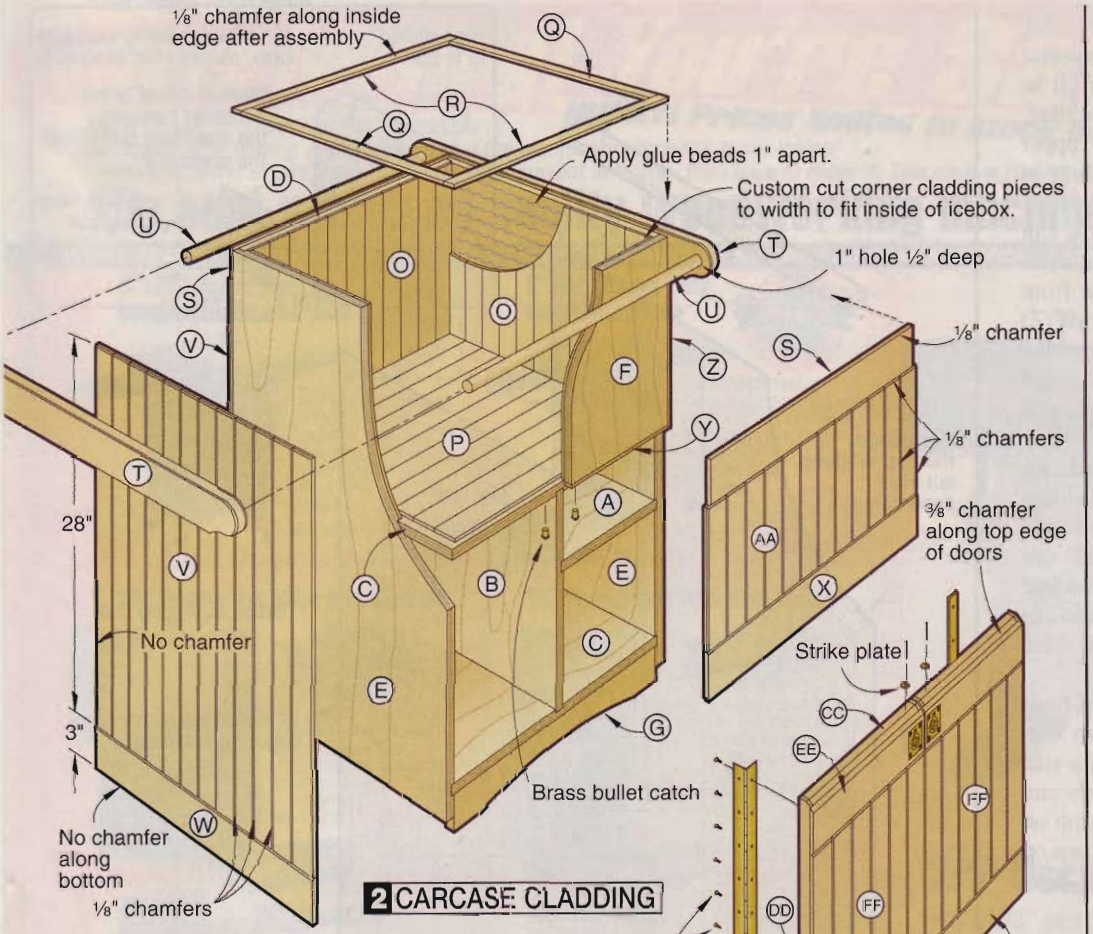
flush with the top of the carcase. Remove the spacers. When the glue dries, turn the carcase on its back, then sides, and repeat the operation.

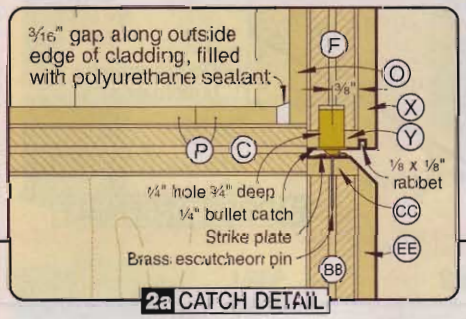
3 Trim the interior bottom cladding to length and rip all but one piece to width. With 3/16" spacers all around, fit the cladding, once again trimming the last piece. Spread glue, place a plywood scrap over the cladding, and apply weight until the glue dries.

4 Cut the carcase side bands (Q) and the carcase front/back bands (R) to size. Glue and clamp them in place. When the glue dries, sand the bands flush with the inside cladding and the outside of the carcase. Chuck a chamfer bit in your handheld router, and rout the 1/8" chamfers on the bands' inside edges, as shown on **Drawing 2.**

5 Rip the horizontal cladding (S, W, X, EE) to width. Set aside parts W, X, EE. Chuck a chamfer bit in your table-mounted router, and rout 1/8" chamfers on the outside edges of the upper horizontal cladding (S). Trim the cladding to length so its ends are flush with the carcase sides. Glue and clamp the parts S in place.

6 Cut blanks for the handles (T) to the size listed. Make two copies of the Handles from the *WOOD PATTERNS®* insert. Cut them apart at the break line, and adhere them to the blanks' ends with spray adhesive, forming a mirrored





pair. Chuck a Forstner bit in your drill press, and drill the holes where indicated. Bandsaw and sand the ends to the pattern lines. Chamfer the handles' entire outside edges (the face without the hole), and about 5" back from each end on the inside edges. Set the handles aside.

7 Rip two 1×1×30" blanks for the towel bars (U), and form them as shown in the shop tip, *right*. Trim them to length. Capturing the towel bars in the 1" holes, glue and clamp the handle assembly to the carcase sides so the tops are flush with the bands (Q) and the ends protrude equally.

8 Retrieve the pieces prepared for the carcase vertical cladding (V). Trim them to length, and rip all but three of them to final width. Rout ⅛" chamfers on the outside edges and ends of all but the three over-width pieces. Rout chamfers on the ends and one edge of these pieces.

9 Place the carcase on its side, and lay out 11 of the Vs, starting flush with the front edge of the side (E), and keeping the parts pushed tightly together. For the last V, rip one of the over-width pieces so its ripped edge is flush with the back (D). Do not chamfer this edge of the cladding piece. Now glue and clamp the vertical cladding to the side, keeping the upper ends against the handle's lower edge. Use cauls secured with bar clamps to spread the clamping pressure across the entire side. When the glue dries, remove the clamps and cauls and repeat on the other side.

10 Retrieve the lower horizontal cladding (W). Rout ⅛" chamfers on the front ends and upper edges, making a mirror-image pair. Trim them to length so the rear end is flush with the back (D). Glue and clamp the Ws in place.

11 Place the carcase on its front, and lay out 11 of the Vs on the back, this time starting flush with the square edge of the last cladding strip on one side. Rip the last wide strip V so its edge is flush with the cladding on the other side. Chamfer the ripped edge. Once again, using cauls and bar clamps, glue and clamp the cladding to the back.

shop tip **Making custom dowels for the towel bars.** Chuck a ½" round-over bit in your table-mounted router, and position the fence flush with the pilot bearing. Mark the fence 3" from the bit's center, and form the towel bars, as shown in the photo. Stop your routing when the blanks' ends align with the mark on the fence. Leaving the last 3" of blank square prevents it from rotating as you round over its edges. For safe routing and uniform results, use a featherboard, as shown.

12 Retrieve one back/front horizontal cladding piece (X), and trim it so the ends are flush with the side cladding. Chamfer the two ends and the upper edge. Glue and clamp the cladding in place at the bottom rear.

13 Turn the carcase onto its back. Cut the front panel lower band (Y) to size, and glue and clamp it to the front panel. Cut the front panel side bands (Z) to size. Chamfer the ends and edges that abut the handles (T) and vertical cladding (V). Glue and clamp the side bands in place.

14 As with the back vertical cladding, cut the front panel vertical cladding (AA) to size, and chamfer the ends and edges, leaving one piece wide with one unchamfered edge. Fit the cladding across the panel, rip the last piece to width, and chamfer the ripped edge. Glue and clamp the cladding in place.

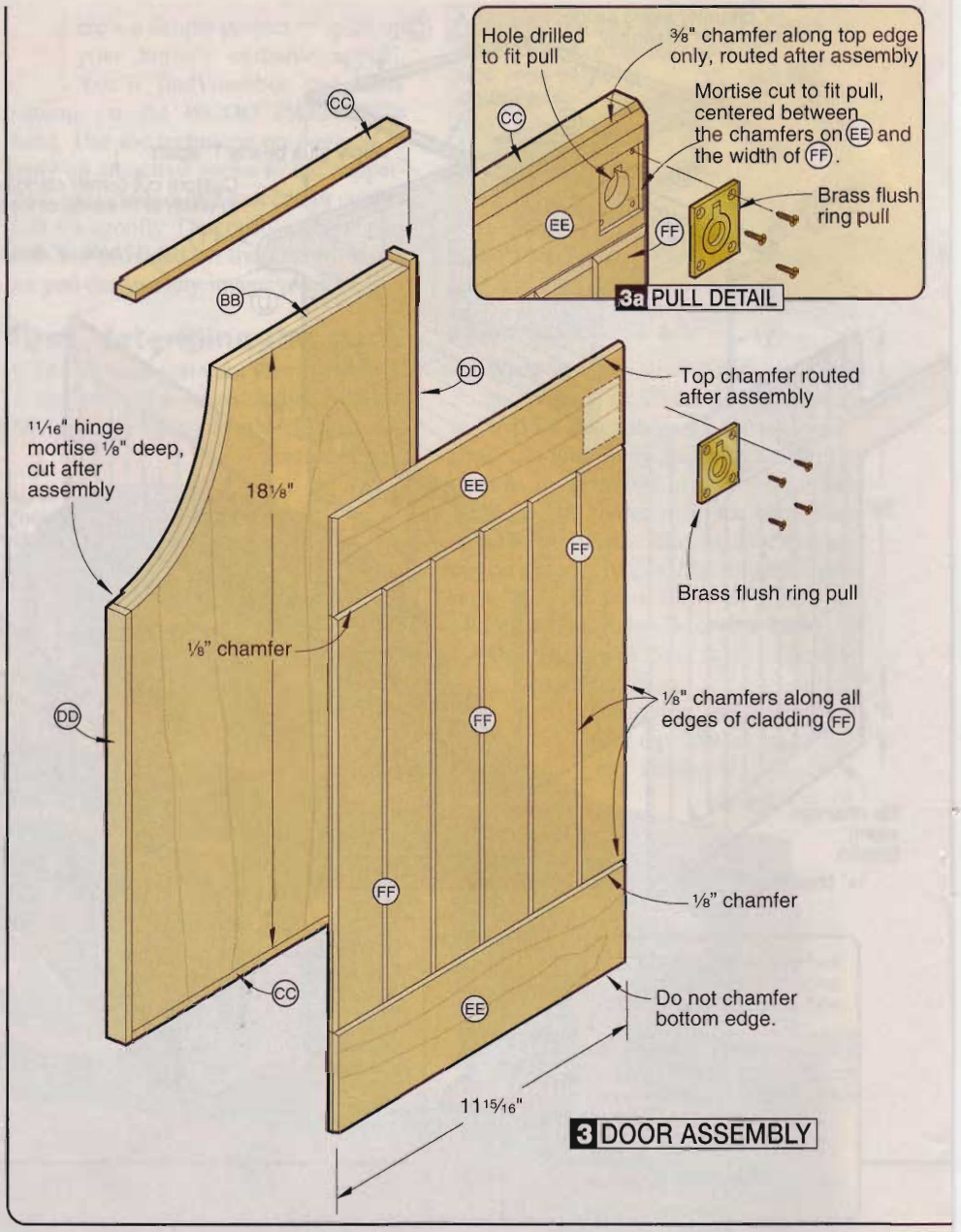
15 Retrieve the other back/front horizontal cladding (X), and trim it so the ends are flush with the panel's side bands. Rout chamfers on the ends and top edge. Form the ⅛×⅛" waterstop on the bottom inside edge, where shown on **Drawing 2a**. Glue and clamp the horizontal cladding in place.

Build a pair of matching doors

1 Cut the door panels (BB) to size. Retrieve the door upper/lower bands (CC) and door side bands (DD), and cut them to size. Glue and clamp the bands to the door panels, as shown on **Drawing 3**.

2 Retrieve the door horizontal cladding (EE), and trim them so the ends are flush with the door side bands. Rout chamfers on the ends and one edge of each piece. Glue and clamp the upper horizontal cladding in place with the square edges up. Set aside the other two pieces.

3 Trim all the door vertical cladding (FF) to length, and all but two to width. As before, chamfer all ends and all but one edge on the two wide pieces. Position the pieces on each door, ripping and chamfering the wide ones to fit. Glue and clamp the vertical cladding to the door. Retrieve the lower horizontal cladding, and glue and clamp it in place with the square edges down. Rout the ⅜" chamfers on the doors' top edges, as shown on **Drawing 3a**.

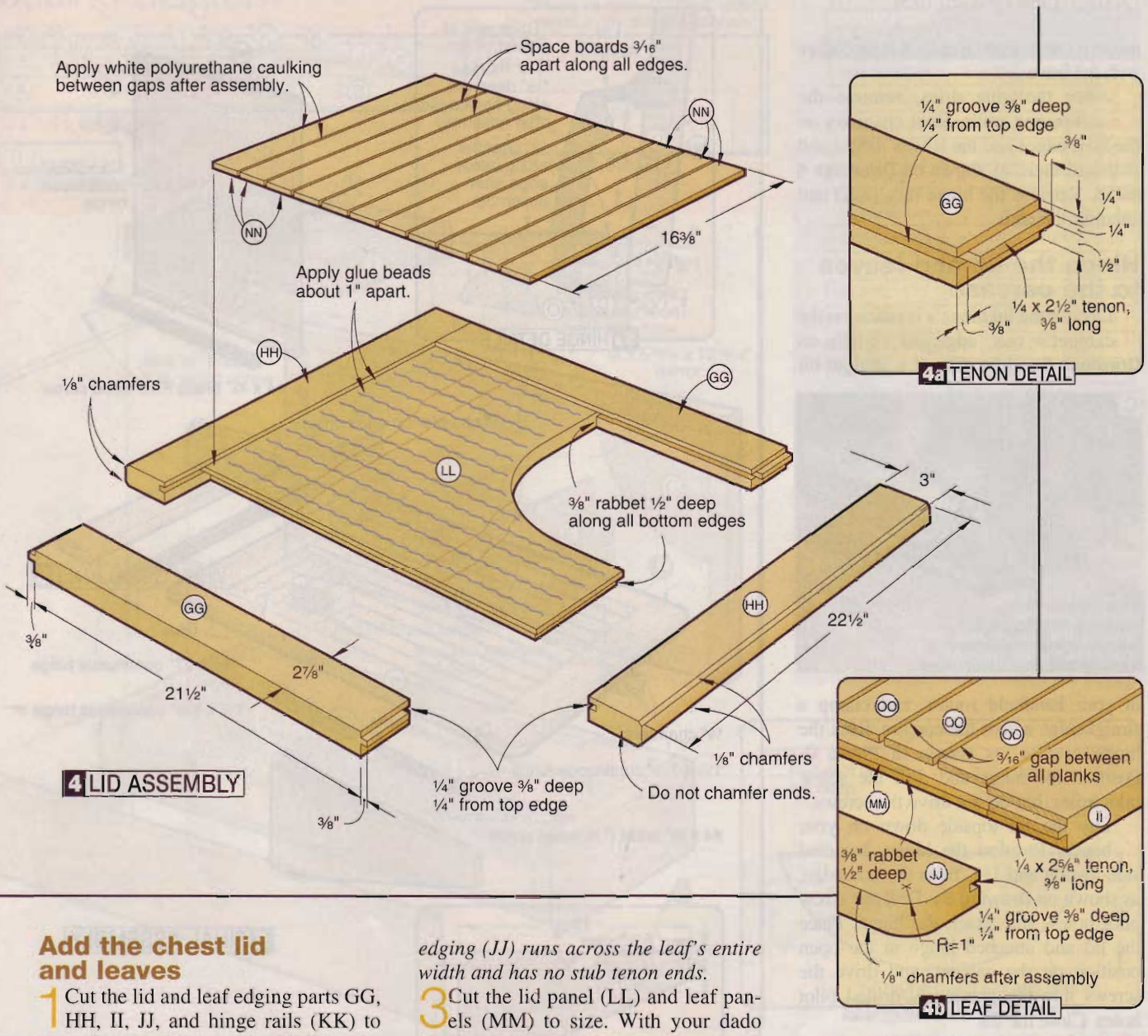


4 Drill a hole in each door for the pulls' center recesses, centered vertically between the chamfers on the horizontal cladding and horizontally on the width of the door vertical cladding, as shown on **Drawing 3a**. Chisel recesses for the back protrusions that house the pulls' ring pivots. Position the pulls and mark their perimeters with a utility knife. Form the mortises with a straight bit in your handheld router, cleaning up the edges with a chisel. Drill pilot holes and drive the screws.

5 Measure the knuckle diameter of your continuous hinge. Install a dado blade in your tablesaw, adjust it to cut to this depth, and form the 1 1/16"-wide hinge rabbets in the doors. Cut two pieces of continuous hinge to length, and hang the doors. Leave a ⅛" gap between the doors and the front carcase panel.

***Note:** Our hinges came with ½"-long screws. For increased holding power we replaced them with ¾" screws.*

6 Mark bullet-catch locations 1⅛" to both sides of center on the front panel's lower edge, as shown on **Drawing 2a**. Drill the holes. (We used a right-angle attachment with our drill.)



Add the chest lid and leaves

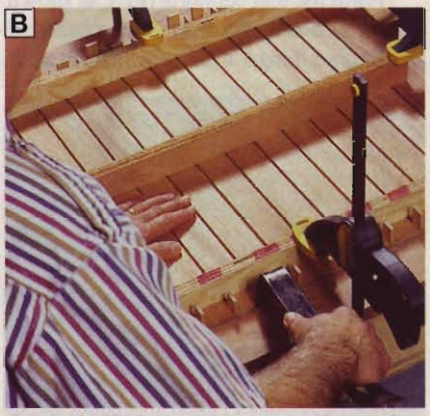
1 Cut the lid and leaf edging parts GG, HH, II, JJ, and hinge rails (KK) to size. Set the hinge rails (KK) aside. Install a 1/4" dado blade in your tablesaw, and plow the grooves in parts GG–JJ, as shown on **Drawing 4**. Sand the corner radii on the leaf end edging (JJ), where shown on **Drawing 4b**.

2 Install a 1/2" dado blade in your tablesaw, and form the stub tenons on both ends of the lid/leaf short edging (GG), as shown on **Drawing 4a**, and one end of the leaf long edging (II), as shown on **Drawing 4b**.

Note: *Leaf construction differs slightly from lid construction. As in lid construction, the leaf short edging (GG) has stub-tenon ends and is captured between the long edging (II). But the leaf end edging (JJ) runs across the leaf's entire width and has no stub tenon ends.*

3 Cut the lid panel (LL) and leaf panels (MM) to size. With your dado blade, plow the rabbets in the panels' edges and ends, forming tongues that mate with the grooves cut in the edging. Glue and clamp the lid and leaf edging to their respective panels, measuring diagonally to check squareness. Lay them on a flat surface to dry.

4 Retrieve the lid cladding (NN) and the leaf cladding (OO), and cut them to size. These pieces do not get chamfered. Cut 35 spacers 3/16×3/4×1". Apply glue beads to the plywood lid panel, as shown on **Drawing 4**. Bed the lid cladding in the glue, inserting spacers between the pieces and clamping cauls across the cladding, as shown in **Photo B**. When the cladding is securely clamped,



Apply light clamp pressure to the cauls. Use a pry bar to push the cladding against end spacers. Tighten the clamps.

remove the spacers. Repeat this procedure with the leaves.

5 After the glue dries, remove the clamps and cauls. Rout chamfers on the lid's edges and the leaves' edges and outboard ends, as shown on **Drawings 4** and **5**. Retrieve the hinge rails (KK) and chamfer the ends.

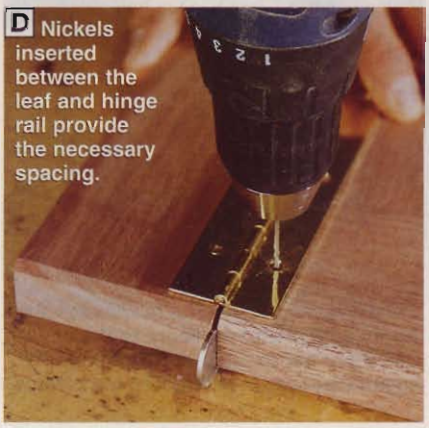
Hinge the lid and leaves to the carcase

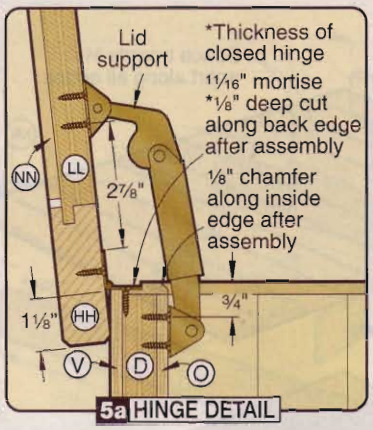
1 Lay out the lid hinge's location on the cabinet's rear edge, as shown on **Drawings 5** and **5a**. Chuck a straight bit

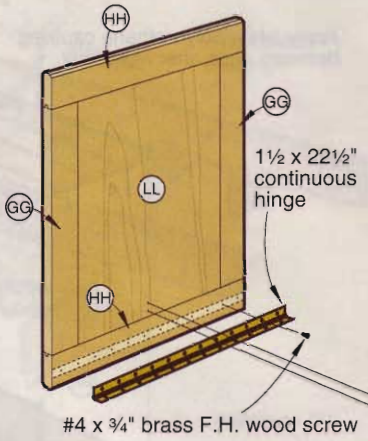
in your handheld router, and clamp a straightedge across the carcase. Rout the hinge mortise, as shown in **Photo C**. Position the hinge and drill the screw pilot holes, but do not drive the screws.

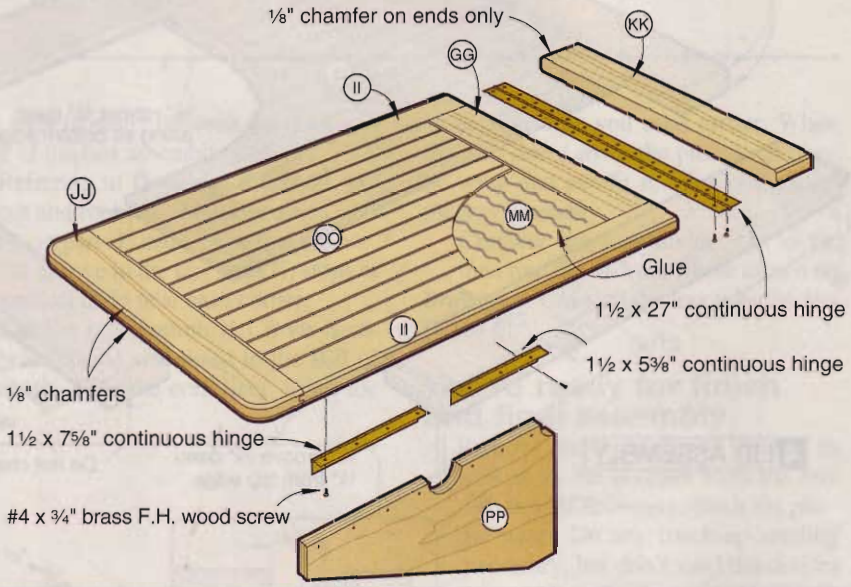
2 Lay the lid topside down on your bench. Position the hinge, centered side-to-side and 1⅛" from the rear edge, as shown on **Drawing 5a**. Drill the screw pilot holes, and attach the hinge. Place the lid and attached hinge in the open position on the cabinet, and drive the screws into the previously drilled pilot holes. Close the lid.

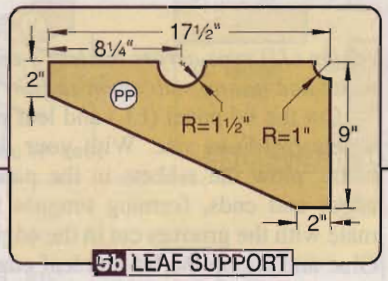
3 Form the leaf supports (PP), as shown on **Drawing 5b**. Cut four pieces of continuous hinge to length. Drill screw







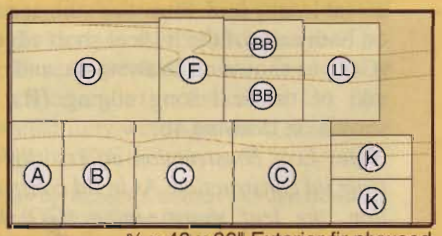




pilot holes, and attach the hinges to the supports so they both fold forward. Lay the leaves topside down on your bench. Position the supports and attached hinges, centered on the leaf width with the supports' ends flush with the leaves' inboard ends, as shown on **Drawing 5c**. Mark the screw locations, drill the pilot holes, and drive the screws.

4 Retrieve the hinge rails (KK), and clamp them to the leaves, inserting

cutting diagram



¾ x 48 x 96" Exterior fir plywood

bill of materials

patio party center

Carcase, drawers		T	W	L	Matl.	Qty.
A	drawer shelf	¾"	23¼"	11⅛"	P	1
B	vertical panel	¾"	23¼"	16½"	P	1
C	bottoms	¾"	23¼"	22½"	P	2
D	back	¾"	22½"	33¾"	P	1
E	sides	¾"	23¾"	33¾"	P	2
F	front panel	¾"	23½"	14¾"	P	1
G	skirt	¾"	2½"	22"	M	1
H	lower drawer front	¾"	9⅞"	10½"	M	1
I	lower drawer sides	¾"	9⅞"	22½"	M	2
J	lower drawer back	¾"	9⅛"	9½"	M	1
K	drawer bottoms	¾"	10"	18½"	P	2
L	upper drawer front	¾"	5⅛"	10½"	M	1
M	upper drawer sides	¾"	5⅛"	22½"	M	2
N	upper drawer back	¾"	4⅜"	9½"	M	1

Carcase, cladding		T	W	L	Matl.	Qty.
O*	interior side cladding	¼"	2"	14⅝"	M	44
P*	interior bottom cladding	¼"	2"	21⅛"	M	11
Q*	carcase side bands	¼"	1"	22½"	M	2
R*	carcase front/back bands	¼"	1"	23½"	M	2
S*	upper horizontal cladding	¼"	3"	23½"	M	2
T	handles	1"	3"	33½"	M	2
U*	towel bars	1"	1"	24½"	M	2
V*	carcase vertical cladding	¼"	2"	28"	M	36
W*	side lower horiz. cladding	¼"	3"	23¾"	M	2
X*	back/front horiz. cladding	¼"	3"	24"	M	2
Y*	front panel lower band	¼"	¾"	23½"	M	1
Z*	front panel side bands	¼"	¾"	12¼"	M	2
AA*	front panel vertical cladding	¼"	2"	9¼"	M	12

Doors, lid, leaves		T	W	L	Matl.	Qty.
BB	door panels	¾"	11⁷⁄₁₆"	18⅛"	P	2
CC*	door upper/lower bands	¼"	¾"	11⁷⁄₁₆"	M	4
DD*	door side bands	¼"	¾"	18⅝"	M	4
EE*	door horizontal cladding	¼"	3"	11¹⁵⁄₁₆"	M	4
FF*	door vertical cladding	¼"	2"	12⅝"	M	12
GG	lid/leaf short edging	1"	2⅞"	22¼"	M	4
HH	lid long edging	1"	3"	22½"	M	2
II	leaf long edging	1"	3"	27¼"	M	4
JJ	leaf end edging	1"	3"	27½"	M	2
KK	hinge rails	1"	2⅞"	27½"	M	2
LL	lid panel	¾"	22¼"	17½"	P	1
MM	leaf panels	¾"	22¼"	24¾"	P	2
NN*	lid cladding	¼"	1¾"	16⅜"	M	11
OO*	leaf cladding	¼"	1¾"	23⅝"	M	22
PP	leaf supports	¾"	9"	17½"	P	2
QQ	support blocks	¾"	2¼"	3"	M	2

*Parts initially cut oversize.

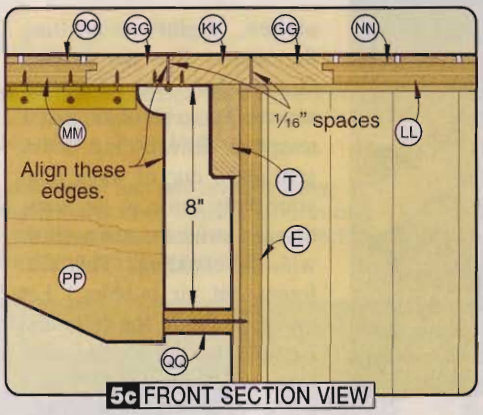
Materials Key: P–A/B grade exterior fir plywood, M–mahogany

Supplies: #8x1½" flathead wood screws (48), #8x1½" brass flathead wood screws (32), #8x3" deck screws (4), #4x¾" brass flathead wood screws (150), #8x¾" panhead screws (16), 2" fixed casters (4), 1¼" chrome-plated brass tailpiece assembly w/stopper, exterior glue,

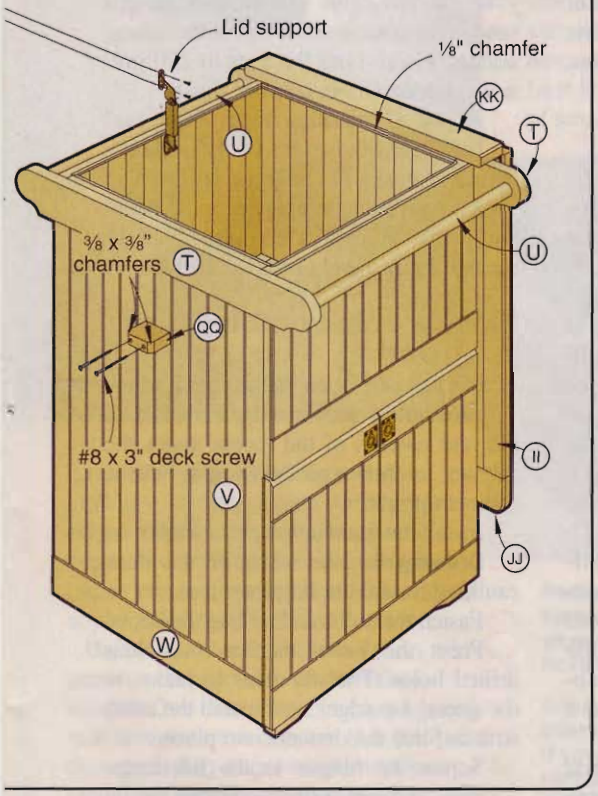
Buying Guide

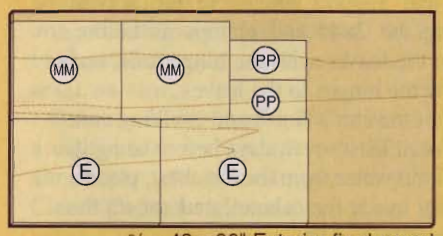
Hardware: 1½x48" brass-plated piano hinges, no. 27H48, $15.50 each (4); brass flush ring pulls w/screws, no. 127386, $9.99 each (2); ¼" brass bullet catches, no. 27H37, $4.99/10 pack (1 pack); self-balancing lid support, no. 04Y31, $3.99 each. Available from your local Woodcraft store, or call 800/225-1153.

Marine supplies: Sikkens Cetol Marine satin wood finish no. 539106, $30.99/qt. (2 quarts); Sikaflex-291 white polyurethane sealant, 310 ml caulking tube no. 174490, $13.99 ea. (4 tubes). Call West Marine, 800/262-8464.

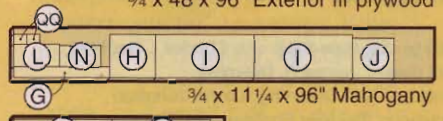


5c FRONT SECTION VIEW

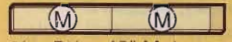




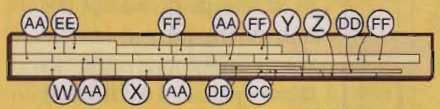
¾ x 48 x 96" Exterior fir plywood



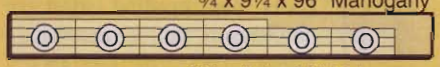
¾ x 11¼ x 96" Mahogany



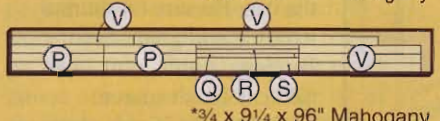
¾ x 5½ x 48" Mahogany



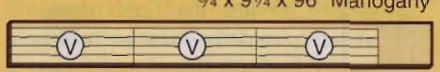
*¾ x 9¼ x 96" Mahogany



*¾ x 9¼ x 96" Mahogany

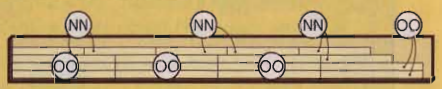


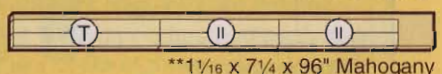
*¾ x 9¼ x 96" Mahogany



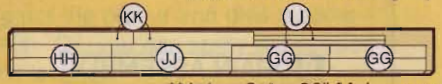
*¾ x 9¼ x 96" Mahogany

*Resaw into two halves and plane stock to ¼" thick.

**Plane stock to 1" thick.

*¾ x 9¼ x 96" Mahogany



**1⁷⁄₁₆ x 7¼ x 96" Mahogany



**1⁷⁄₁₆ x 9¼ x 96" Mahogany

1/16" spacers. Cut two lengths of continuous hinge to length, and center them over the 1/16" spaces. Keep the leaves' edges flush with the hinge rails' ends. Drill the screw pilot holes, as shown in **Photo D**. Screw the hinge only to the hinge rail. Glue and clamp the hinge rails to the carcase, as shown on **Drawing 5c**, inserting 1/16" spacers between the hinge rail and the lid. Keep the hinge rails' ends flush with the edges of the lid.

5 Clamp a pair of straight 8'-long 2×4s to the carcase, then clamp the leaves to the 2×4s, as shown in **Photo E**, once again inserting 1/16" spacers between the leaves and the hinge rails. Align the hinges with the previously drilled screw holes in the leaves, and drive the screws.

6 Swing the leaf supports down to their vertical position. Measure the distance between the supports and the carcase sides. Cut the support blocks (QQ) to this width. Chamfer the corners, and drill the countersunk shank holes.

Clamp the leaves to 2×4 rails while fastening the hinges and fitting the support blocks.

Position the blocks, as shown on **Drawing 5c** and centered on the width of the cabinet. Use the screws to mark the pilot hole locations. Drill the pilot holes, and screw the blocks in place.

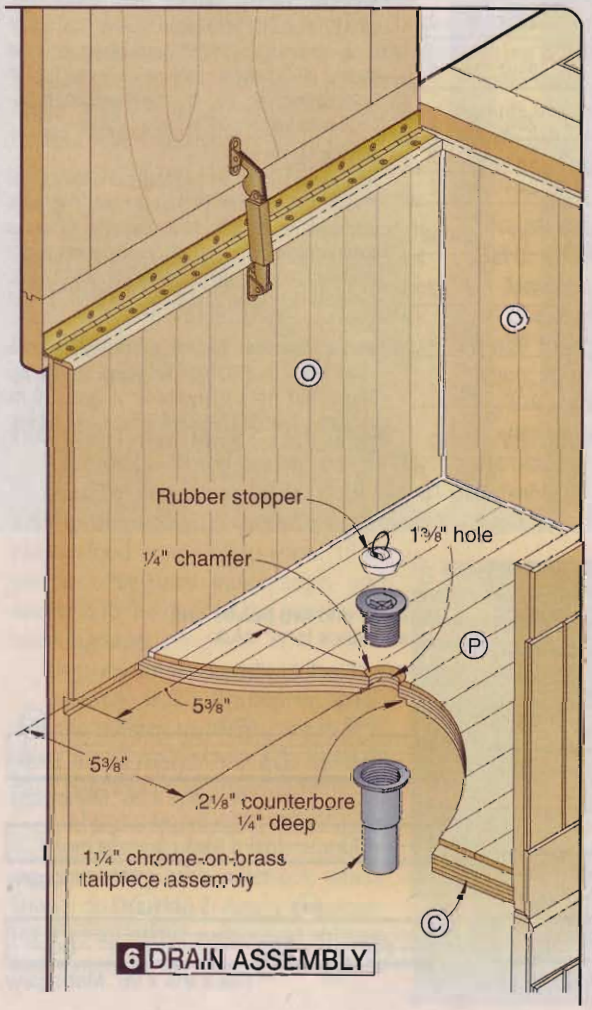
Apply an outdoor finish, and caulk the seams

1 Remove the leaves, leaf supports, lid, doors, hinges, and pulls. Obtain your 1¼" tailpiece assembly to verify its installation requirements. (We bought ours at a local home center.) Drill a hole in the bottom of the ice chest, as shown on **Drawing 6**. (To draw the flange tight to the chest's bottom, we chamfered the hole's top edge. To accommodate the tailpiece's maximum mounting thickness, we formed a counterbore from the bottom, using a ⅜" rabbeting bit chucked in a handheld router.)

2 Finish-sand all the parts to 220-grit. Apply three coats of Sikkens Cetol Marine satin wood finish to all the parts, except the tops of the lid and leaves. Apply only one coat to these parts. (Additional coats are applied after caulking the seams.) Follow the instructions on the can. Be sure to saturate exposed end grain. See the Buying guide for our Sikkens finish source.

3 When the finish dries, caulk the seams with white Sikaflex-291 polyurethane sealant, slightly overfilling the seams. See the Buying Guide for our Sikaflex source. Make a solution of 1 teaspoon dishwashing detergent and 1 cup of water. Dip your putty knife in the solution and strike the seams flush with the cladding. (This also forces out air bubbles.) Let the sealant cure for 48 hours. Remove any large accumulations of excess sealant with a razor blade scraper. Then sand the tops of the lid and leaves with your random-orbit sander and 80-grit sandpaper to remove the rest of the excess sealant. Finish-sand the tops to 220 grit, and apply two more coats of finish.

4 Apply 1" masking tape about 1/16" back from the edges of the icebox's corner seams, and caulk the seams. Dip your finger in the soap solution, and tool the joints, leaving a rounded fillet of sealant. Immediately remove the tape.



6 DRAIN ASSEMBLY

Finally, reassemble your parts

1 Lay the cabinet on its back, drill screw pilot holes, and fasten the casters in the rear corners of the recess under the cabinet, as shown on **Drawing 1**. Set the cabinet upright.

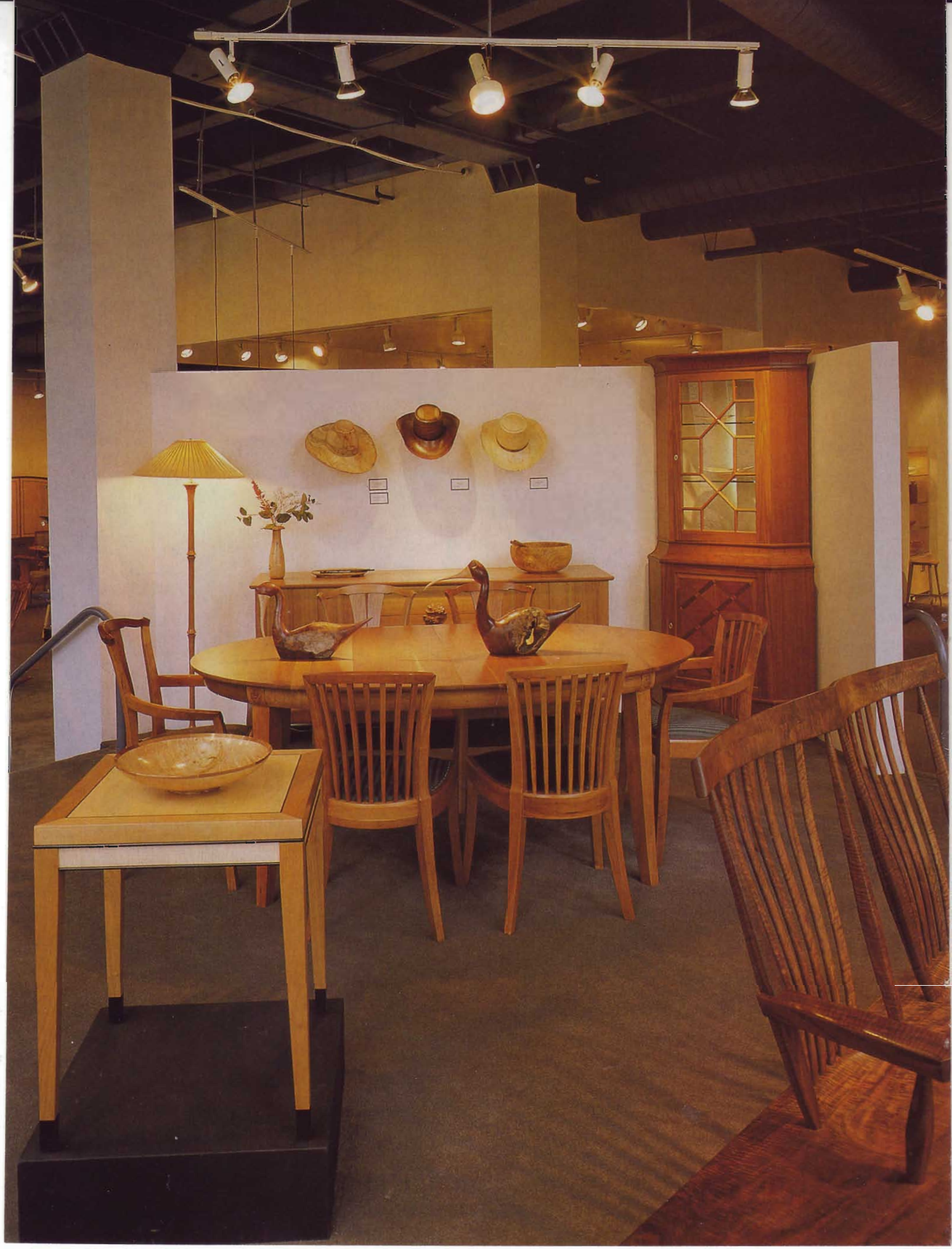
2 Install the drain tailpiece, as shown on **Drawing 6**. Use some of the deck caulking to seal the tailpiece in place.

3 Fasten the pulls, and rehang the doors. Press the bullet catches into their drilled holes. Transfer their locations to the doors' top edges, and install the catch strikes. Slide the drawers into place.

4 Screw the hinges to the lid, hinge rails, and leaf supports. Fasten the lid hinge to the cabinet and install the lid support, as shown on **Drawing 5a**. Screw the leaf support hinges to the leaves. Using the 2×4s and clamps as before, align the leaves with the hinge rails, and screw the hinges to the leaves.

5 Let the cart's finish and caulking cure for at least seven days before using it. To drain water from the ice chest, place a bucket inside the cabinet, underneath the drain tailpiece.

Written by **Jan Hale Svec** with **Charles I. Hedlund**
Project design: **James R. Downing**
Illustrations: **Kim Downing; Lorna Johnson**
Photographs: **Baldwin Photography; Douglas E. Smith; Hetherington Photography; Andy Lyons**



a sound formula for sales from the gallery that really sells

With annual sales in the millions, Seattle's Northwest Fine Woodworking ranks as the most successful retail woodworking cooperative in the nation.

It was formed in Seattle in 1980 by 20 woodworkers concerned about the lack of outlets for their work. Each chipped in $50 or so to rent a retail space. They found one in the city's Pioneer Square, back then a run-down and tacky area. Even so, it was a beginning for Northwest Fine Woodworking. But oh how things have changed!

Today, Northwest Fine Woodworking operates two 5,000-square-foot retail galleries—at Pioneer Square and in Bellevue—bringing in more than $1 million apiece in annual sales of handcrafted furniture and other items of wood. Twenty years ago, the group couldn't afford to hire a salesperson, so they each had to put in time selling in the gallery. After a year, though, the woodworkers had made enough money to hire their first salesperson. Now, the cooperative has 10 employees and a full-time director of operations.

Quality leads to sales success

"We're in three distinct businesses: fine furniture, gifts, and art," says Chris Brookes, the director of Northwest Fine Woodworking (NWFW). "And within those areas, I've got supreme woodworkers who only build one-of-a-kind pieces as well as those who produce limited-production ones. And of our 28 members, 15 account for 85 percent of all member sales.

"Part of the success here is shared diversity," Chris continues. "Besides our members' work, we go out of our way to find interesting nonmember woodworkers, who now number about 250. I always say that we sell everything from a $10 baby rattle to a $10,000 table."

According to the director, other reasons for the cooperative's success have changed over time, yet one has remained constant. "From Day One the members policed the work coming in so that technically it is always perfect. The finish is perfect. The design is contemporary, refreshing. One just can't copy a Shaker chair and get it in the gallery."

Aim for customers that have money to spend

"Not that we don't sell to other people, but the customers we aim for have a household income of $150,000 or greater and fall into the 32 to 45 age bracket," Chris explains. "When we have that type of customer, they may spend $10,000 initially, but they have no problem eventually spending $200,000 over the years. It's truly amazing what they can spend."

To get to that customer, Northwest Fine Woodworking makes sure that the

Seattle Convention and Visitors Bureau knows of its existence. That's because convention planners look for places that their attendees can visit when not in meetings. And to do that, they start at the bureau. The airport also gets NWFW's attention. Chris makes sure that the co-op has a display there once every two years. The result? "Sales to business visitors and area tourists represent about 40 percent of our total revenue," Chris says.

To have sales in the millions takes knowledgeable salespeople—personnel who know what they sell and where it came from. Here's how that's accomplished. "New sales employees have a nine-month training schedule that covers basic operations," notes the director. And within the first 14 months they have to visit the shops of each of the primary woodworkers because the most difficult area of sales is the referral process.

"That's because customers come in not knowing what they want," Chris goes on. "The salesperson has to take the customer through the woodworkers' portfolios. Then, once the salesperson has a sense of what the customer likes, he or she must become more definitive. Then, through subtle questioning, the customer has to be qualified to see if they're financially able to buy custom woodworking—not just dreaming. Salespeople have the responsibility to protect the woodworker."

What it costs to sell

Members of NWFW cooperative pay a price for sales, and for membership as well. Chris explains both structures. "Within the gift category—interesting salad bowls, jewelry boxes, and such—they just fly out of here. So I buy them outright from the mostly nonmember makers. But on the furniture side of things, it's consignment. That is, the maker pays nothing until the piece is sold. For instance, a member pays the gallery a 32 percent commission. For nonmembers, the commission is 40 percent if the item tops $1,500 retail price. Under $1,500, the gallery's commission is 45 percent. And if we send a member a client for custom work, that is our [the

Two members talk about their co-op

Ken Richards lives in Maple Valley, outside Seattle. He's been a Northwest Fine Woodworking (referred to as the "gallery") member for six years and a professional woodworker for more than twice that. He serves on the co-op's board of directors. The following is how Ken believes membership has benefited him as well as what's responsible for NWFW's success.

Ken Richards is all smiles about his breakfront showcase of Ceylon satinwood.

- "I kept fairly busy before I became a member, but it was with more traditional designs in domestic hardwoods. I really wanted to do contemporary things in exotic wood. With the gallery, I've been able to pursue that and become really busy. In fact, one of my first gallery referrals was a couple from Boca Raton, Florida, who had come to the Northwest seeking handmade, contemporary furniture. I ended up doing a dining set and several other major pieces for them."
- "The last few years, 100 percent of my sales have been through the gallery. I don't even have time to do speculation work because I'm booked for three years with custom work."
- "I do some satisfying work with NWFW's new-member program that helps aspiring woodworkers get over the hump from hobbyist to professional."
- "One reason for the co-op's success is its appeal to a broad range of customers, all with different design tastes. Certainly the gallery couldn't have survived if everyone did the same type of work that I do."
- "NWFW is an inspirational community asset."

gallery's] client for life. And there's one golden rule for all sales: Our members must never undercut what would be the retail price. If a rocking chair has a $2,000 price tag in the gallery, it has the same exact price tag if a client comes to their shop."

Becoming a member in order to sell has its costs and requirements, too. Chris outlines the process. "When woodworkers express an interest in joining, we ask them to put some of their work in the gallery for up to 12 months. That way, they see if it sells, and get to know us as well. If that works out, they submit a formal application. Then, the membership committee meets with the person, visits his or her shop, and gets a sense of the person and where they're going with their work.

"Potential members also have to come to one of the general meetings and give a 15-minute slide presentation and talk about themselves," Chris adds. "After that, all the members vote. If accepted, the new member must attend 10 of the 12 board meetings during the first year because the co-op doesn't just want members whose work will sell. They want members who are active."

A new member also pays a one-time assessment of $500, plus $100 for a stock certificate, then agrees to pay $30-a-month dues for 72 months, for a total of $2,760. After that, monthly dues are dropped and replaced by funds from sales commissions, which the cooperative uses to pay operating costs.

Written by **Peter J. Stephano**
Photographs: **Courtesy of Northwest Fine Woodworking**

See what they sell

If visiting Seattle, stop by the Northwest Fine Woodworking gallery at 101 S. Jackson in Pioneer Square (206/625-0542). The cooperative's gallery in Bellevue is located at 601 108th Ave., N.E., Plaza 100 (425/462-5382). Or view its website at www.nwfinewoodworking.com.

Bob Spangler, a woodworker since 1975, became a member of Northwest Fine Woodworking in 1990, and like Ken Richards, currently serves on the board of directors. Here are his thoughts on membership and why NWFW has had such success.

- "The gallery helped me tremendously in learning to run a business. That probably goes for the other members, too, because woodworkers are mainly just a bunch of guys with tools and pickup trucks."
- "About 80 percent of my sales are through the gallery. That counts speculation work sold off the floor and referrals for custom work."
- "NWFW is a tremendous opportunity for members to show and sell their work. Yet I have personally benefited by raising my skill level; there's always a subtle competition."
- "It has become such a successful cooperative gallery due to the focus. All wood, all very high quality, and it's juried. Shoppers know what to expect."
- "Another factor for success is the huge diversity the gallery offers. We have people doing limited-production work as well as absolutely one-of-a-kind furniture."

Bob Spangler's cherry extension table and chair still delight him.

TLC for Cleanliness counts

Just like a car, your woodworking equipment will work better and last longer with regular maintenance. How often do you need to stop building projects and start cleaning your machinery? That depends on how much you use a given tool.

If you're a hobbyist who works in the shop now and then, set aside one Saturday every year for checking and cleaning tools. If you're running a tablesaw all day, every day, you should clean it every couple of weeks.

Here, we've laid out the essential maintenance steps for some common workshop equipment.

Keep the juice flowing

•**Cords.** Check for frayed spots; check plugs for burned prongs. If you find any flaws, replace the cord and plug.

•**Brushes.** These actually are solid blocks of carbon. Some are accessible beneath two screw-on covers on the motor housing; others require removal of the housing. Replace the brushes if you find rainbow colors on a spring, a collapsed spring—like the one being held *above*—or a broken copper lead inside a spring. Also replace any brush that's worn down near or past the limit mark on its side or shows signs of burning or chipping.

•**Arcing.** Peer through the vent slots while the motor is running. You should see small sparks at each brush. But if sparks trail around the motor, have the tool checked at a repair shop.

•**Grounding.** Touch a continuity tester from the grounding prong on the plug to any metal on the tool. A reading shows that the tool is safely grounded.

General Procedures

•**Blow out dust** from inside portable power tools by directing compressed air through the motor vents while the tool is running. Wear safety goggles, and don't use more than 50 pounds of pressure. Blast around drill chucks, too.

•**Remove rust** from metal work surfaces with degreaser or rust penetrant and an abrasive pad. To protect against further rusting, spray with TopCote, available at woodworking stores or from Klingspor's Sanding Catalogue, 800/228-0000, at a price of $9.95 for a 5.5-ounce can, item number BOS 1005. Allow the TopCote to dry to a haze, then wipe it off.

•**Clean plastic** parts with a damp cloth. Use water, because chemical solvents can damage plastic.

TOOL-SPECIFIC STEPS

•**Tablesaw:** Clean the moving parts with a stiff wire brush and citrus cleaner. Don't use water, which rusts cast iron. (Note: To get at all the key spots on a cabinet-style saw, you probably will have to remove the tabletop.)

•**Saw blades:** Spray them with oven cleaner, then buff them with a fine, knotted wire brush mounted in a drill.

•**Router:** Remove the collet, and clean its inside surface with a round, fine-bristle, brass brush. Clean the outside with steel wool or a nylon pad. Clean the subbase, and lubricate it with a Teflon lubricant or wax.

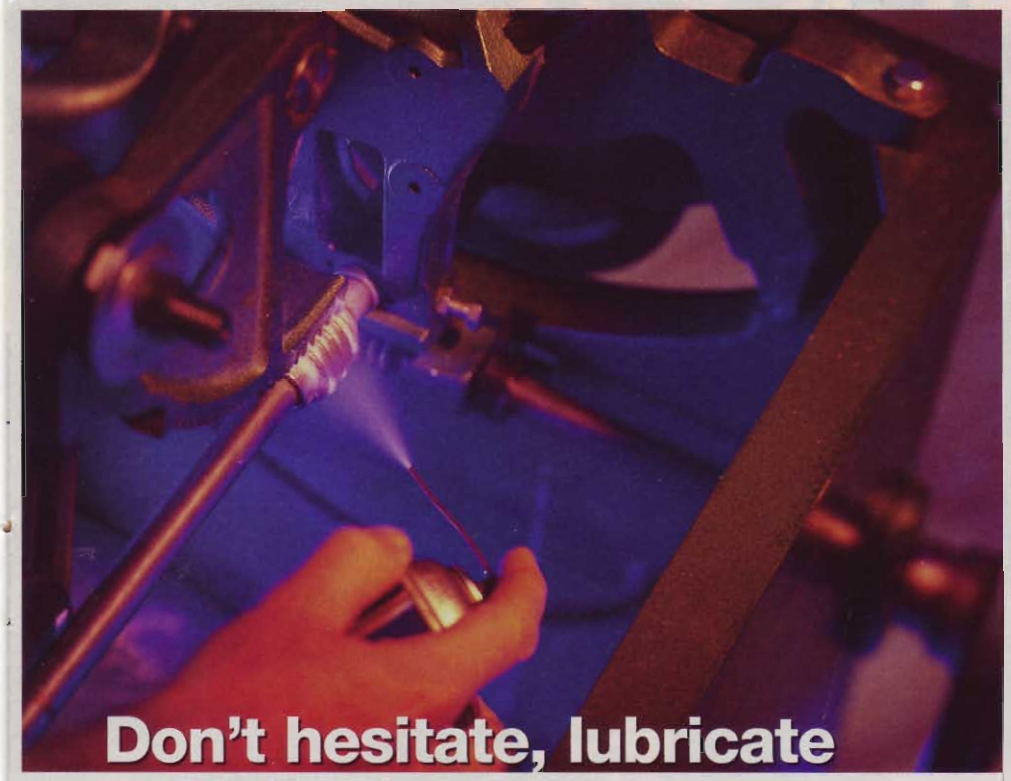
•**Plunge router:** Clean the plunge rods with a fine abrasive pad, and lubricate them with graphite or wax.

•**Bandsaw:** Clean off any sawdust that has packed between the blade and the tires, using a Scotch-Brite pad or a light wire brush. Replace the tires if they're cracked.

•**Radial-arm saw:** Clean the track and rollers with a rag dipped in a 50/50 mixture of ammonia and water. Then lubricate with WD-40, and wipe most of the oil off again. Also clean the column with a fine abrasive pad, spray it with WD-40, and wipe off.

power tools

Clean, lubricate, and adjust them regularly. You'll get years of faithful service in return.



Don't hesitate, lubricate

General Procedures

•**Noisy gears,** or oil leaks behind the spindle, indicate that the grease has broken down. Open the tool housing, and put a modest amount of medium-weight grease on the gears. Or, you might choose to take it to a tool repair shop.

•**Gearbox oil reservoirs** require frequent checks. Top them off with 90-weight oil. You'll find these on tools such as stationary planers and worm-drive saws.

•**Sealed bearings** on most newer power tools require no lubrication. However, some less-expensive tools have an oil hole that opens onto a sponge, which feeds oil to a brass or bronze bushing. Apply only a few drops of light oil in that case.

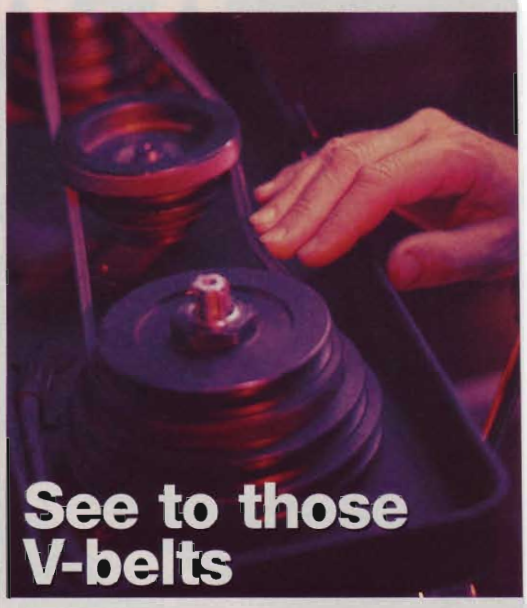
TOOL-SPECIFIC STEPS

•**Tablesaw:** Apply white lithium grease or powdered graphite on worm gears, bevel gears, and trunnions.

•**Belt sander:** Spray white lithium grease on the needle bearings mounted on a shaft in the idler roller.

•**Planer:** Some bigger and older machines have drive chains. Remove the side cover and oil the chain. Spray Teflon lubricant or graphite onto the jackscrews that raise and lower the table or cutterhead. If your model has oil cups on top of the table, apply a few drops of oil in those. Check the rollers for build-up. Clean metal rollers with solvent and a fine wire brush, and clean rubber rollers with a hand scraper.

•**Drill press:** Apply a Teflon lubricant or graphite to the height-adjustment rack.



See to those V-belts

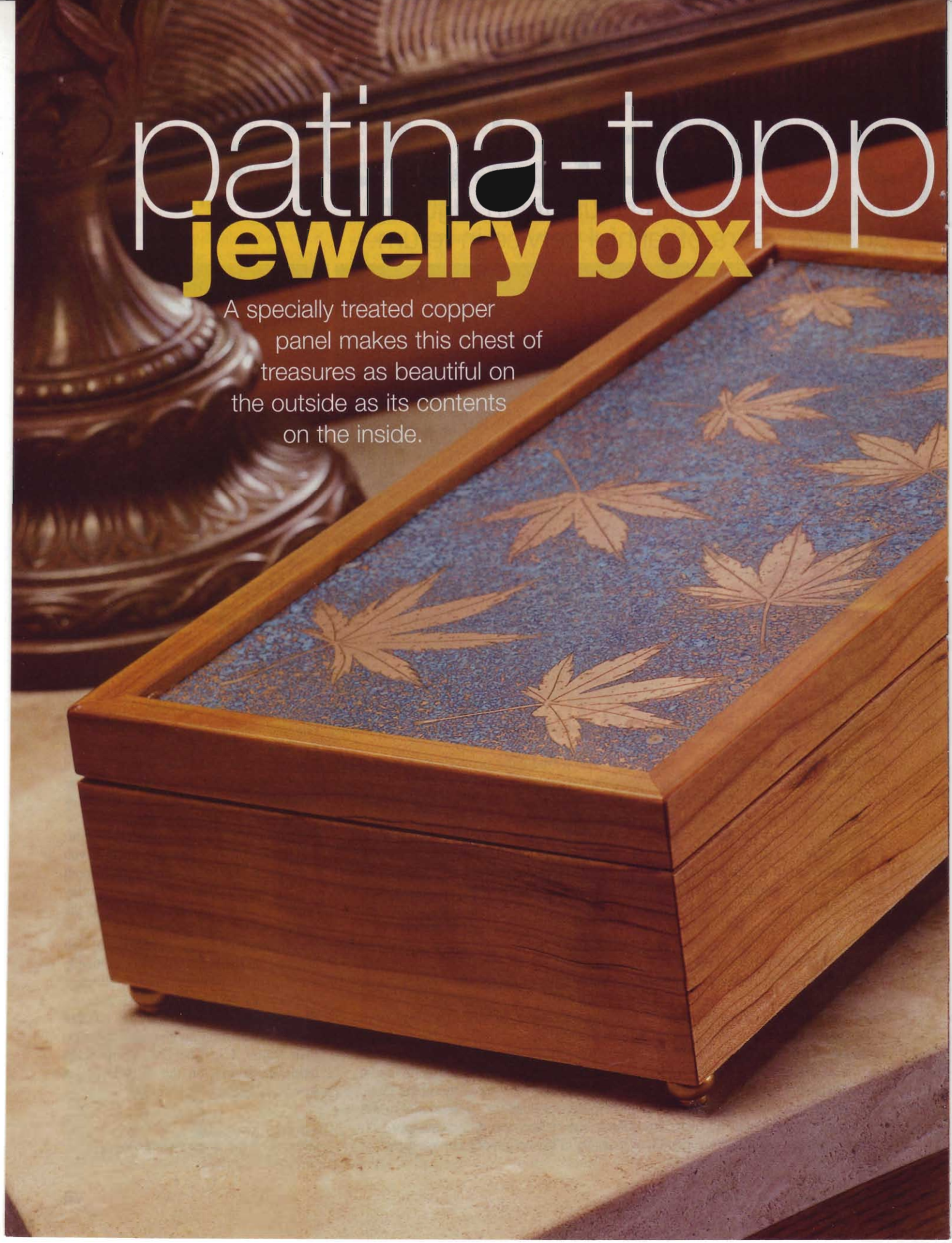
•**Cracks.** If the machine vibrates as it shuts down, that could be a sign of belt problems. Check the belt, or belts, and replace any that are cracked. Always buy one of the same series and length. If the marking has worn off the old belt, take it to a supplier as a reference. You can find local belt suppliers under "Power Transmission Equipment" in the Yellow Pages of your telephone book.

•**Tension.** When you tap a belt with your hand, it should feel taut, not slack. If you push on it lightly, it should flex about 1/32" for every inch between the pulley centers. Adjust tension according to the manufacturer's instructions.

•**Performance.** Spray a commercial belt dressing on the belt while the machine is running. This product reduces slippage and extends the life of the belt.

•**Pulleys.** Make sure they're aligned properly with one another and tight on their shafts. Use Loc-Tite, available at hardware stores, on the threads of set screws to keep them secure.

Written by **Jim Pollock**
Photography: **D.E. Smith Photography**



patina-topp jewelry box

A specially treated copper panel makes this chest of treasures as beautiful on the outside as its contents on the inside.

ed

To bring you the best and freshest project designs, we travel throughout the country. On one of these prospecting trips, we discovered Peter Dellert, a talented designer and builder from Holyoke, Massachusetts.

Peter's unique jewelry box features a striking copper lid with a patina pattern that you can duplicate easily. (See the instructions on the *following pages.*) But the beauty of this box lies more than skin-deep. The removable tray and system of interior dividers multiply the storage area and keep the contents neatly organized. A stylish, paper-thin cork liner looks great and cushions valuable jewelry.

To make it easy for you to build this box, we assembled the hardware, cork lining, and other components into a convenient kit. See the Buying Guide accompanying the Bill of Materials, and you'll soon have a gem of a jewelry box.

Note: *In presenting this project to you, we stayed true to Peter Dellert's choices in high-quality hardware and other building materials. You can purchase a supplies kit (not including wood) for $63.75 through the Buying Guide on* page 57. *That may seem expensive, but when you consider that Peter charges $375 for this box, you can understand why he selects only the best hardware. If you would like to hold down your costs, simply substitute less-expensive hinges, make wooden feet in place of the brass ones, and flock the surfaces otherwise covered with cork.*

First up, the box parts

1 Using ½"-thick cherry, rip a 48"-long board to 3⅛" wide for the case front/back (A) and the case sides (B).

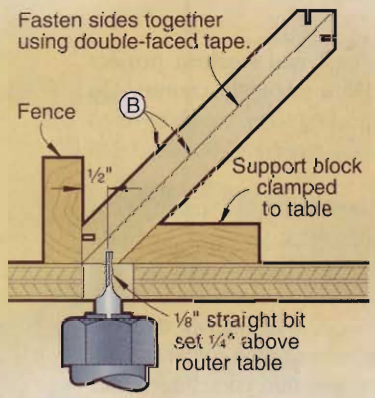
2 Set your tablesaw's blade and rip fence to cut the grooves along the top and bottom inner faces of the case pieces (A, B). After you make these cuts, test-fit the thickness of the copper and hardboard for the top panel (C) into its groove. Also test the fit of the cork lining and the hardboard bottom panel (C) into its groove.

3 Cut the case front/back (A) and the case sides (B) to the finished length shown in the Bill of Materials.

4 Referring to **Drawing 1** and **Photo A**, set up your router table to cut the spline slots. Use double-faced tape to join the outside faces of the front/back (A) to each other temporarily. Position

Continued on page 56

1 SPLINE-SLOT CUTTING



Position the front/back parts against the fence and right stop-block, and lower them onto the running bit.

patina technique

For great reactions, try simple chemistry

Ammonia fumes are all you need to give shiny, new copper a weathered look. But if you want to include some eye-pleasing designs, let us show you the secret.

Any material that can keep the fumes away from selected areas can act as a "resist" and produce designs on copper. To make the ornamental panels for the box on *pages 52-53* and the house sign on *pages 60-61*, we began with the procedures that Massachusetts craftsman Peter Dellert uses to great effect.

Eventually, we came up with a new twist on the technique that makes it easier for a beginner to get reliable, attractive results. Give it a try and add a terrific decorative technique to your project-building repertoire.

Of course, you don't have to limit your designs to the leaf shapes shown here. Try any natural, geometric, or artistic shapes you like. You can find countless samples in clip art books and software. And it isn't just for box lids and house signs, either. It could be just the thing for a serving tray, door panel insert, mailbox, or any number of other applications.

First, some shopping

You'll need a sheet of flat, medium-gauge copper, self-adhesive label paper, table salt, non-sudsy household ammonia, the pattern in the *WOOD PATTERNS®* insert, and a plastic container with a snug-fitting lid. If you prefer to make your own design, we'll tell you how to do that with some leaves and a photocopier.

You'll find copper at home centers and lumber yards, or check under "sheet metal work" in the Yellow Pages of your phone book. Those companies often have a supply of copper and will sell you what you need, maybe at a better price. Look for label paper at an office supplies store. You can find various sizes of plastic boxes, with lids, at a department store.

Now, the art part

We used Japanese maple leaves for our design. Put our pattern in a photocopy machine and copy it onto self-adhesive label paper. Or, to make your own design, arrange leaves on the glass surface of the copier, and

More patina possibilities

Want to experiment with variations on this technique? Try these ideas:

- "Paint" any shape you want with petroleum jelly, an excellent resist.
- For clear, sharp letters, use vinyl lettering from a hobby or department store.
- After salting the surface, cover it with copper sulfate mixed with sawdust and ammonia, instead of fuming. This method creates a warm, brown tone. You can buy copper sulfate at a pharmacy.
- For a green patina, mist the salted copper with Patina Green, made by Modern Options Inc. and available in art stores and other outlets. A 4-ounce bottle costs about $5.50.
- Use brass or bronze instead of copper to get a different look.

A sharp-looking design calls for attractive shapes, a good layout, and precise cutting with a sharp knife.

Any coating of salt will bring results, but the density does make a difference. Run a couple of tests before you work on the piece for your project.

2

run a test copy. Rearrange them until you like the design and the leaf edges appear crisp on the photocopy. Then, load self-adhesive label paper into the appropriate tray of the copier, and print the final version.

Using paper was the innovation that gave us the consistent results we sought. Our first efforts involved gluing real leaves to the copper. But that produced varying degrees of crispness along the leaf edges and varying amounts of residue underneath the leaves. Next, we tried plastic leaf shapes, but we got sharp, shiny images that looked too artificial. So we tried self-adhesive paper, and liked what we saw.

Cut the copper to size with shears or a utility knife, and sand it with 180-grit sandpaper until it's uniformly shiny. Clean it with denatured alcohol to make sure nothing remains that will interfere with the next steps. Wear gloves when handling the copper from now until it goes into the ammonia fumes, so it won't pick up any oil from your fingers.

After the solvent evaporates, peel the backing off the label paper and affix it to the copper. With an X-acto or other sharp knife, carefully cut around the leaves' outlines, as shown in **Photo 1**. You also can cut "veins" into the leaves for a more realistic appearance. Remove the white paper surrounding the leaves. Clean off any stubborn adhesive with lacquer thinner, then wait a couple of minutes while the solvent evaporates.

Spray a light mist of water over the copper. Then sprinkle on an even, moderate dusting of ordinary table salt, as shown in **Photo 2**. Different amounts bring different results, so it's best to test the technique on a couple of small pieces of copper first.

3

Remove the copper when the patina appears complete. Remember to wear a respirator mask whenever you have the lid off your container.

Scrub with moderate pressure and check the look of the piece as you go. If you accidentally remove too much patina, carefully add salt where you want it and fume the copper again.

And finally, chemistry

Now, you're going to use ammonia to transform that bland copper color into a mottled blue. Ammonia fumes will linger while you carry out this procedure, so set things up outdoors, in the garage, or in some well-ventilated part of the house where the smell won't bother anyone. Wear a respirator mask, too. The strength of those fumes can surprise you. Pour ½" of ammonia into the container. Place blocks of wood or other disposable supports in the box to suspend the copper above the ammonia. Lay the copper on the supports and immediately put the lid on the container.

Ammonia fumes by themselves turn copper a dark, olive color. The salt produces a bluish, crusty residue. But each paper leaf acts as a resist, keeping the salt and fumes away from the copper underneath.

Check the progress after about 4 hours to see if the patina is developing evenly. Leave the copper in the fumes as long as you like, but don't expect much more than very subtle changes after the first 6 hours.

When you remove the copper from the container, as in **Photo 3**, you'll see a dark background around the paper leaves. Working on a piece of cardboard or scrap plywood, scrub off the paper with lacquer thinner and a stiff-bristled brush, as in **Photo 4**. If some dark spots remain on the copper leaf images, that's fine. The leaves look more natural that way.

4

Lightly scrub the background, but don't overdo it. You want to eliminate any "muddy" appearance without knocking off all of the blue residue created by the salt and ammonia. As the workpiece dries, you'll see the finished color start to come through.

Let the copper dry, then apply one or two coats of paste wax. That will protect the patina and give it some luster. Or, you can spray the copper with lacquer.

Continued from page 54

the stop blocks 2 15/16" from the center of the router bit. Switch on the router, then hold the front/back against the right stopblock and the fence. Lower the wood until it contacts the table and support block, and rout the slot by moving the wood to the left until it hits the stopblock. Repeat the process for each of the remaining mitered ends.

5 Referring to the **Drawing 2**, note that the grain of the spline runs along its short dimension. Make the splines by ripping a cherry board 2 5/8" wide, and thickness-plane or resaw it to 1/8" thick. Then cut four splines 1/2" long.

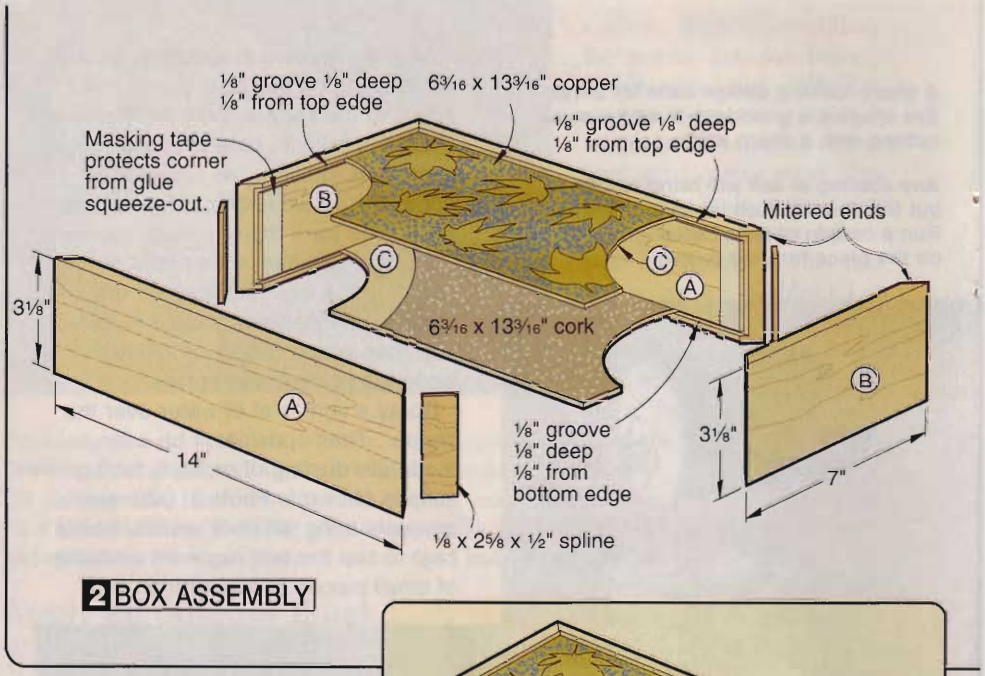
6 Cut two pieces of hardboard for the top/bottom panels (C) to the size listed in the Bill of Materials. Cut the copper panel to the same size, then apply the decorative finish to the metal using the procedure described on the *previous pages* and the leaf patterns found in the *WOOD PATTERNS®* insert. The copper merely rests on the top panel (C), but you'll need to glue the cork liner to the bottom panel (C). To do that, simply brush a thin coat of white glue on the bottom panel and gently smooth out the slightly oversized cork liner with a block of wood. To apply pressure while the glue dries, cover the liner with a piece of waxed paper, add the top panel, then set a toolbox or other weighty object on the stack. After the glue dries, use a utility knife to cut the liner flush with the edges of the bottom panel (C).

Next, assemble the box

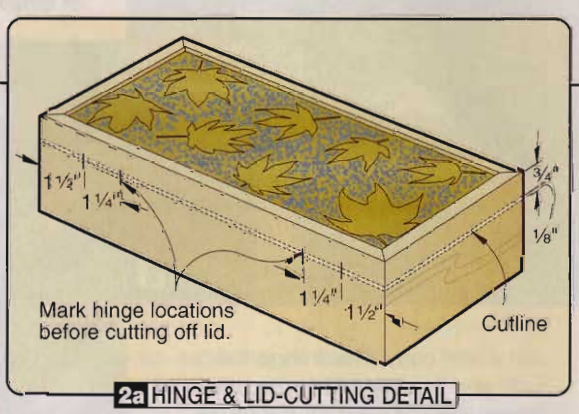
1 To protect the top/bottom panels (C) from the protective finish you'll apply later to the wood, cover them with clear plastic food wrap. Wrap about 1" of plastic over each panel edge, and secure it to the back of the panel with masking tape.

2 Dry-assemble (no glue) the box parts (A, B, C), the copper panel, and the splines to make sure everything fits. If needed, cut a nick out of each panel's corner to get them to fit.

3 To keep glue squeeze-out off interior corners, place a strip of masking tape along each miter cut, where shown on **Drawing 2**. Apply glue sparingly to all of the miters and splines, and assemble the box. If the panels bow inward, making it difficult to add the final box side, cut a 2 5/8"-long scrapwood spacer strip, and spring it between the panels to separate them. Gently snug up the joints with a band clamp, and make certain that the assembly is square and flat while it dries.


1/8" groove 1/8" deep 1/8" from top edge
6 3/16 x 13 3/16" copper
Masking tape protects corner from glue squeeze-out.
1/8" groove 1/8" deep 1/8" from top edge
Mitered ends
B
C
A
3 1/8"
6 3/16 x 13 3/16" cork
14"
1/8" groove 1/8" deep 1/8" from bottom edge
3 1/8"
7"
1/8 x 2 5/8 x 1/2" spline

2 BOX ASSEMBLY



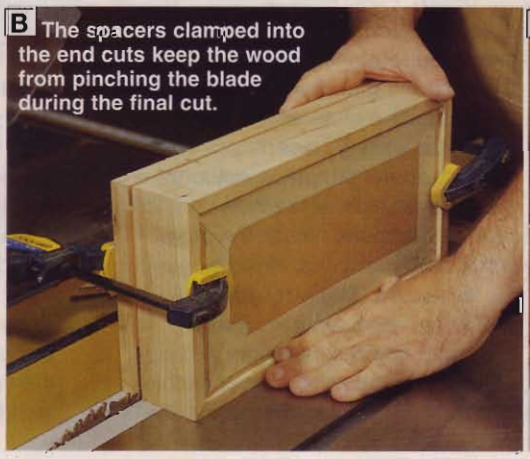
2a HINGE & LID-CUTTING DETAIL

Now, mark for hinges and separate the lid

1 Unclamp the box after the glue dries. Use a pencil and square to mark the hinge locations on the back of the box, where shown on **Drawing 2a**.

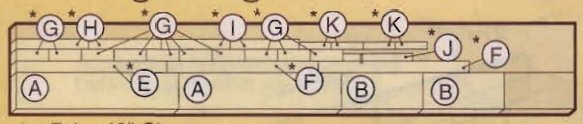
2 Lock your tablesaw's fence 3/4" from the inner side of the blade, and raise the blade about 9/16" above the surface of the table. With the top of the box against the fence, make a cut along both ends of the box. Referring to **Photo B**, clamp spacers into the kerfs, and make the cuts along the front and back of the box. Referring to **Photo C**, remove saw marks by rubbing the cut edges on a full sheet of 100-grit sandpaper spray-glued to a flat surface. Remove the tape from the inside corners of the box and lid.

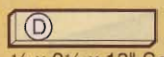
3 Referring to **Drawing 3**, use a square to transfer the hinge-location marks



B The spacers clamped into the end cuts keep the wood from pinching the blade during the final cut.

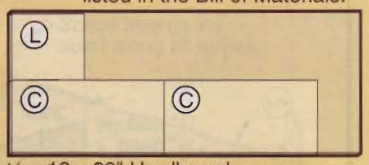
C Move the lid over a sheet of glued-down sandpaper, and you'll quickly erase saw marks.

cutting diagram

½ x 7¼ x 48" Cherry



½ x 2½ x 12" Scrapwood

*Plane or resaw to thicknesses listed in the Bill of Materials.



⅛ x 12 x 30" Hardboard

bill of materials

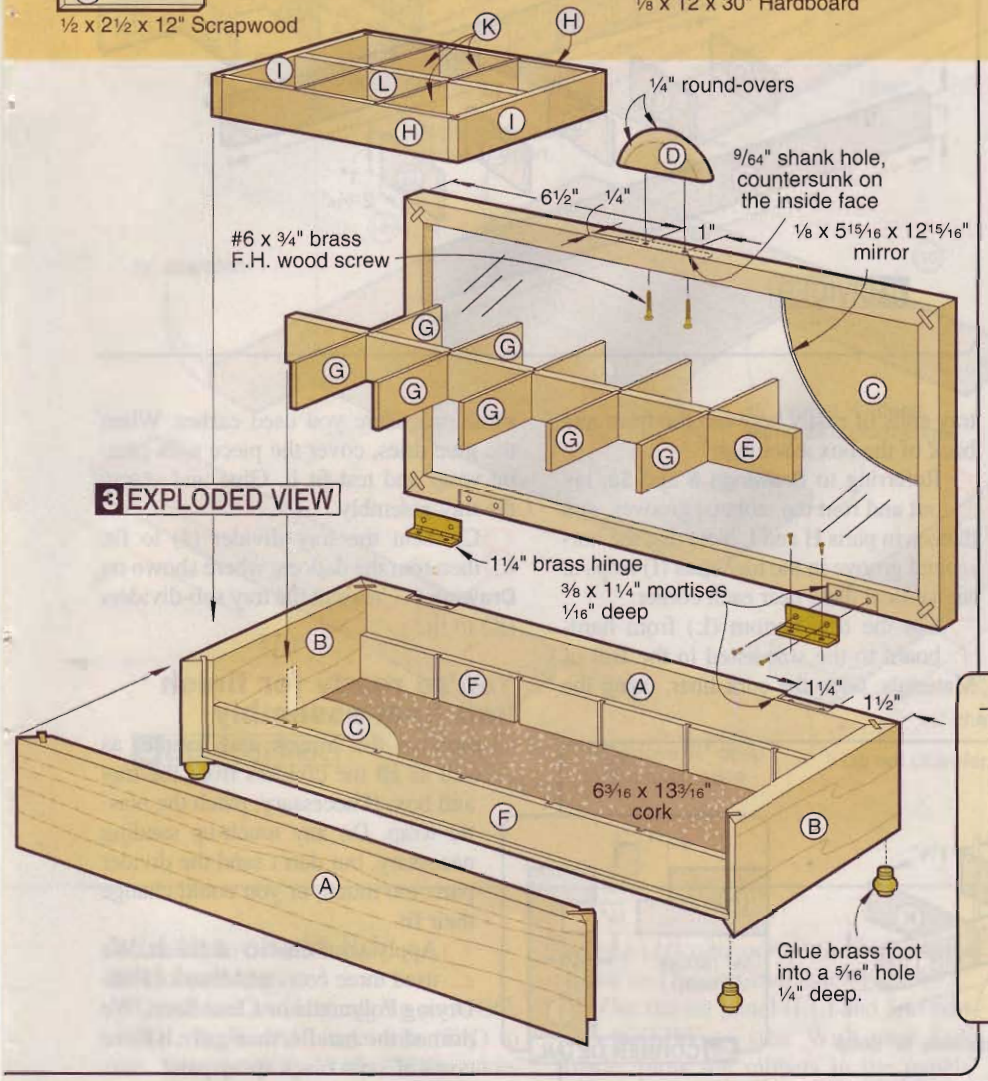
jewelry box

Part	FINISHED SIZE T	W	L	Matl.	Qty.
A case front/back	½	3⅛"	14"	C	2
B case sides	½"	3⅛"	7"	C	2
C bottom/top panels	⅛"	6³⁄₁₆"	13³⁄₁₆"	H	2
D handle*	½"	2⅜"	⅞"	S	1
E case divider	⅜"	1"	13"	C	1
F case divider front/back	¼"	1"	13"	C	2
G case sub-dividers	⅛"	1"	2¹³⁄₁₆"	C	10
H tray front/back	¼"	⅞"	6¼"	C	2
I tray ends	¼"	⅞"	5¹⁵⁄₁₆"	C	2
J tray divider	⅜"	⅝"	6"	C	1
K tray sub-dividers	⅛"	⅝"	2¹³⁄₁₆"	C	4
L tray bottom	⅛"	5¹¹⁄₁₆"	6¼"	H	1

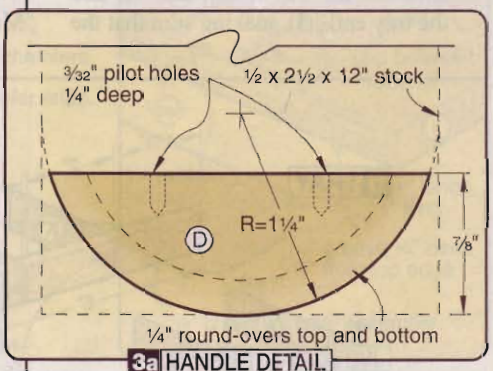
*Cut from ½x2½x12" blank and trim to size.

Materials key: C–cherry, H–hardboard, S-scrapwood.

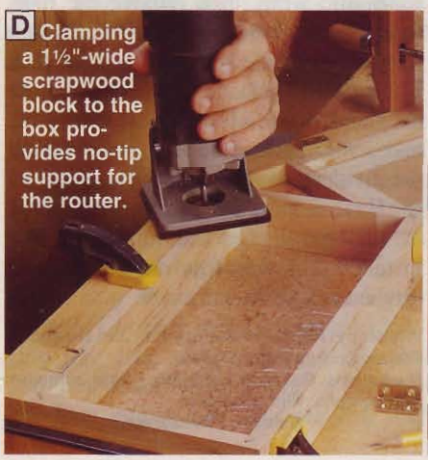
Buying Guide: Brass feet (4); 1¼x1" brass box hinges with screws (2); #6x¾" brass flathead wood screws (2); .016x6³⁄₁₆x13³⁄₁₆" copper sheet; 6³⁄₁₆x13³⁄₁₆" cork wall covering; 5⅝x6¼" cork wall covering (both paper-thin Designtex cork wall covering M6466 cork cubed); ⅛x5¹⁵⁄₁₆x12¹⁵⁄₁₆" mirror; label paper printed with leaf pattern for top. Order kit JB-1, $63.75 ppd. from Schlabaugh and Sons Woodworking, 720 14th Street, Kalona, IA 52247, or call 800/346-9663.



3 EXPLODED VIEW



3a HANDLE DETAIL



D Clamping a 1½"-wide scrapwood block to the box provides no-tip support for the router.

from the back of the box bottom and lid to their inner edges.

4 Use a ¼" bit in a small router, as shown in **Photo D**, to remove most of the waste within the hinge's outline. Rout close to the lines, then finish the mortises with a chisel. Drill pilot holes for the hinge screws, test-fit the hinges, then remove them.

E Using a 12"-long blank for the handle keeps your fingers safely away from the router bit.

Make a stylish handle

1 Cut a ½x2½x12" piece of solid scrapwood (any wood that paints well). Referring to **Drawing 3a**, mark the radius and cutline on the wood. Use a scrollsaw or bandsaw to cut just to the waste side of the radius, then sand to the line.

2 Referring to **Photo E**, put a ¼" roundover bit into your table-mounted router, and rout the top and bottom faces

of the radius. Use your mitersaw to cut the handle to length.

3 Refer to **Drawing 3** to drill the handle-mounting holes through the lid. Holding the handle in place, push a finishing nail through these holes to mark the position of the 3/32" pilot holes in the handle. Screw the handle into place.

Machine and assemble the dividers and tray

1 Referring to the Bill of Materials, prepare blanks for the parts you'll need for the divider and tray assemblies (Parts E, F, G, H, I, J, and K) by planing or resawing cherry to the required thicknesses. Then rip the blanks to width.

2 Crosscut the case divider (E) and the case divider front/back (F) to fit inside the box.

3 Lay out the dadoes on parts E and F, where shown on **Drawing 4**.

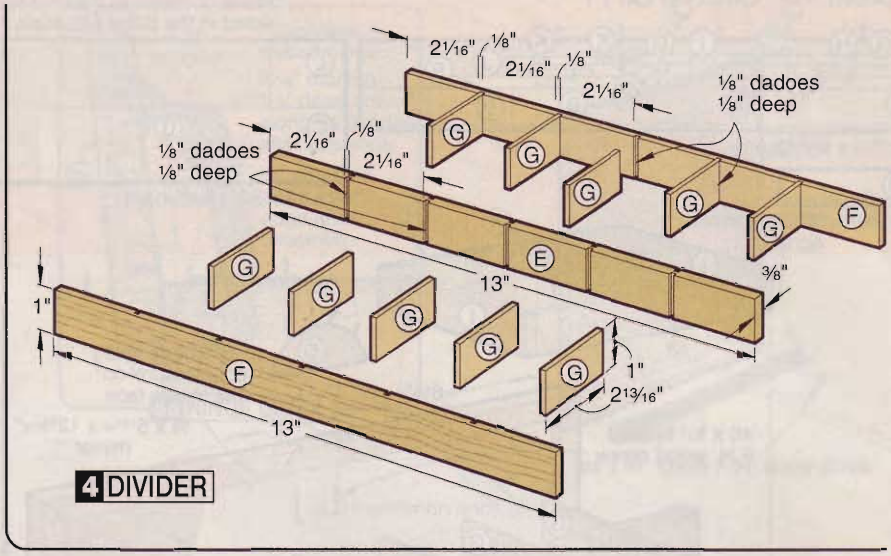
4 Center the case divider (E) inside the box, and position the case divider front/back (F), but do not glue any of the pieces. Crosscut and fit the case sub-dividers (G), but do not glue them.

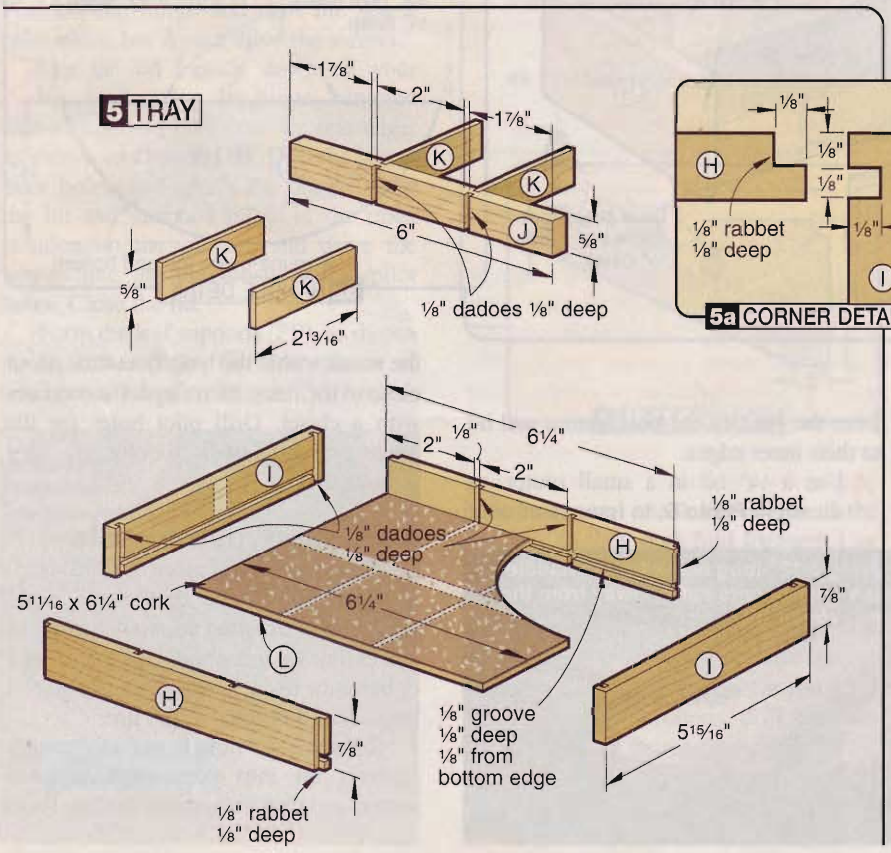
5 Crosscut the tray front/back (H) and the tray ends (I), making sure that the tray ends fit easily between the front and back of the box assembly.

6 Referring to **Drawings 5** and **5a**, lay out and rout the rabbets, grooves, and dadoes in parts H and I. Note that the horizontal groove in the tray ends (I) stops at the vertical dado near each corner.

7 Cut the tray bottom (L) from hardboard to the size listed in the Bill of Materials. Glue the cork liner, using the same procedure you used earlier. When the glue dries, cover the piece with plastic wrap and test-fit it. Glue and clamp the tray assembly.

8 Crosscut the tray divider (J) to fit, then rout the dadoes, where shown on **Drawing 5**. Crosscut the tray sub-dividers (K) to fit.





You're ready for finish and final assembly

1 Remove the hinges and handle, as well as all the dividers from the tray and box. If necessary, patch the plastic wrap. Do any touch-up sanding necessary, but don't sand the divider parts too much, or you could change their fit.

2 Apply your choice of finish. We used three coats of Minwax Fast-Drying Polyurethane Clear Satin. We primed the handle, then gave it three coats of satin black spray paint.

3 Use a crafts knife to cut away the plastic wrap, then remove the tape. Referring to **Drawing 3**, drill holes into the bottom of the box for the brass feet. Use a dab of silicone or epoxy to secure the shank of each foot into its hole. Glue and screw the handle into place. Install the dividers, then replace the hinges.

4 Have a 1/8"-thick mirror cut slightly undersized for the inner lid. We installed ours with four dabs of silicone on the back of the mirror.

Written by: **Robert J. Settich** with **Jim Downing**
Project Design: **Peter Dellert**
Illustrations: **Roxanne LeMoine; Lorna Johnson**
Photographs: **Wm. Hopkins; Baldwin Photography**

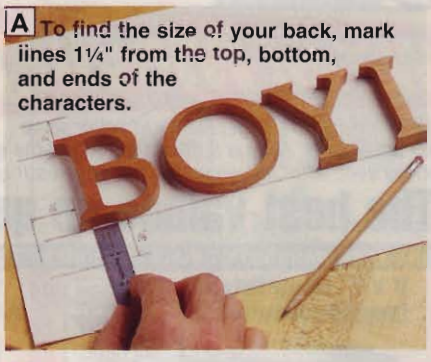
street-smart house sign

Turn your name or house number into a fashionable address

Here's a simple project to spice up your home's curbside appeal. You'll find number and letter patterns on the *WOOD PATTERNS®* insert. Use the technique on *page 54* to apply an attractive patina to the copper-sheet background. We graced our copper with a dragonfly. Dragonfly and leaf patterns are provided on the pattern insert, but you can use any image you like.

First, determine the size

1 Decide what you want your sign to say, and what size letters and/or numbers you are going to use. Enlarge the characters (A) from the pattern insert to your desired size, and arrange them as they will appear. (We used one line of 3"-high letters on our sign.) To accommodate a longer line of characters, extend the ends of the top (B) and bottom (C). More lines can be added by simply lengthening the sides (D).



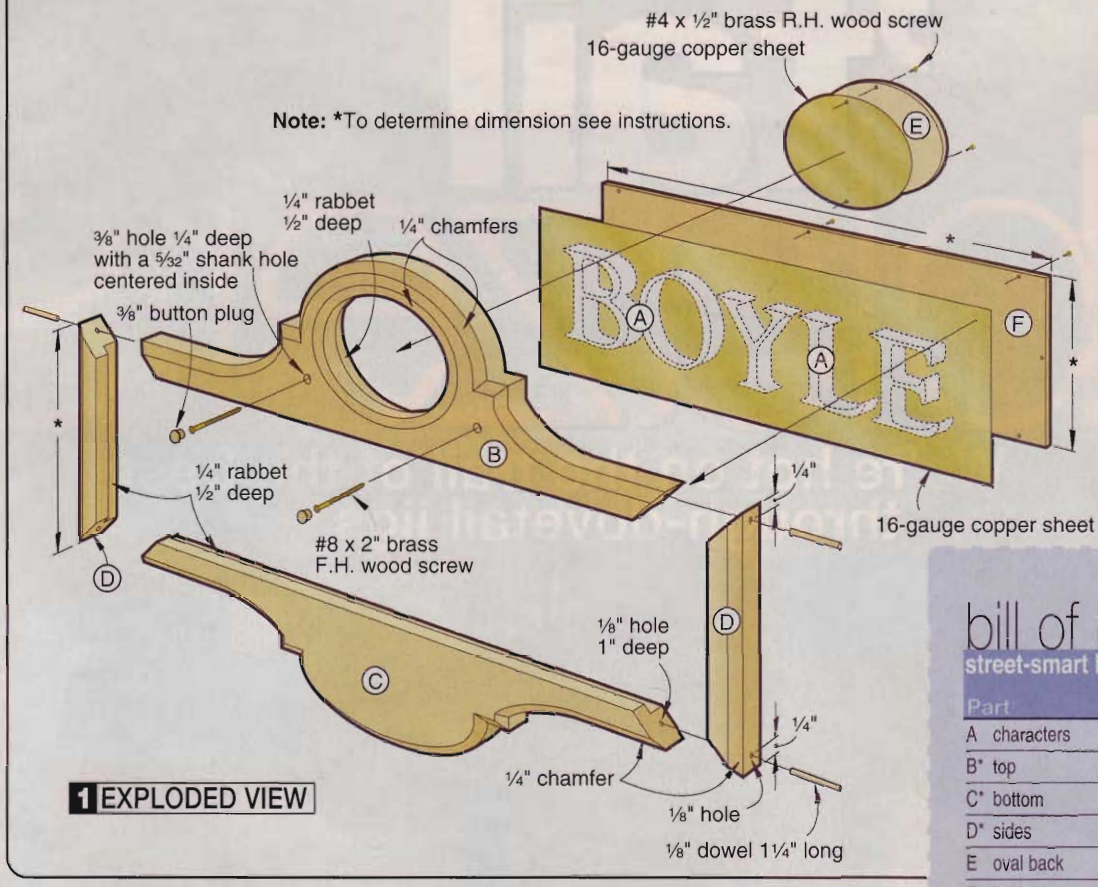
A To find the size of your back, mark lines 1¼" from the top, bottom, and ends of the characters.

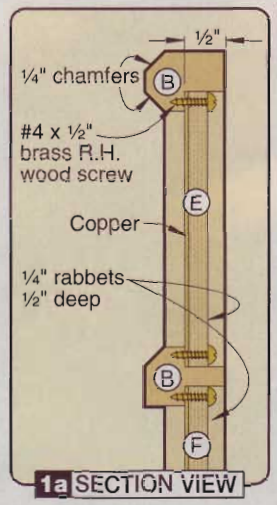
2 When you are satisfied with your layout, plane stock (We used mahogany.) to ½" thick and adhere the character patterns to it with spray adhesive. Orient the patterns so the wood grain is horizontal. Scrollsaw the characters to the lines, then remove the patterns. Rearrange the characters on a sheet of paper. Measure and mark lines 1¼" out from them, as shown in **Photo A**. This is the size of your back (F). (Our back was 5½×16½".) Set the characters aside.

3 Determine the lengths of your top, bottom, and sides by adding 1" to each dimension of the back. (Because our back was 16½" long, our top and bottom lengths were 17½". Our back was 5½" wide, making our sides 6½" long.)

Now, form the frame

1 From 1"-thick stock, cut blanks 4¾" wide to your determined length plus 1" for the top (B), 3¼" wide to your length plus 1" for the bottom (C), and ¾" wide to your length plus 1" for the sides (D). Copy





bill of materials

street-smart house sign

Part	FINISHED SIZE T	W	L	Matl.	Qty.
A characters	½"	**	**	M	**
B* top	1"	4¾"	**	M	1
C* bottom	1"	3¼"	**	M	1
D* sides	1"	¾"	**	M	2
E oval back	¼"	3½"	4½"	P	1
F back	¼"	**	**	P	1

* Parts Initially cut oversize.

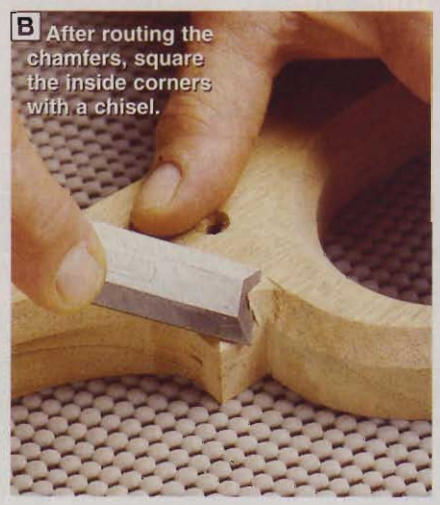
** Dimension or quantity determined by the configuration of your sign. See the instructions.

Materials Key: M–mahogany, P–lluan plywood.

Supplies: spray adhesive, exterior glue, ⅛" dowel, #4×½" brass roundhead wood screws (**), #8×2" brass flathead wood screws (2), ⅜" mahogany button plugs (2), exterior finish, clear epoxy, 16-gague copper sheet.

the Top and Bottom from the pattern insert and adhere them, centered on the length to the blanks. Scrollsaw, then sand to the pattern lines. Drill the countersunk holes where indicated. Remove the patterns.

2 Install a rabbeting bit in your table-mounted router, and rout the rabbets in the back edges of the top, bottom, and sides, and around the inside of the oval cutout in the top, where shown on **Drawing 1** and **1a**.


B After routing the chamfers, square the inside corners with a chisel.

3 Change to a chamfer bit, and rout the front edges where shown. Using a chisel, square up the chamfers' inside corners on the top and bottom, as shown in **Photo B**.

4 Miter the frame pieces to length, and dry-assemble to check the joints. Apply glue to the miters. (We used Titebond II.) Clamp the frame together with a band clamp. When the glue dries, drill ⅛" holes in the corners and glue in dowels, as shown on **Drawing 1**. Sand the dowels flush.

5 Cut the plywood backs (E, F) and mating pieces of 16-gauge copper sheet to fit in the rabbeted openings.

Add the finishing touches

1 Apply a patina to the copper, following the instructions on *page 54*.

2 Finish-sand all the wood pieces to 220 grit. Apply two coats of spar urethane to the frame, backs, characters and two button plugs, sanding lightly with 220-grit paper between coats.

3 When the finish dries, drill screw-shank holes through the backs and copper sheets and pilot holes into the frame. Screw the copper sheets and backs in place.

4 Arrange the characters in the frame, then epoxy them, one at a time, to the copper sheet.

5 Mount your sign using #8×2" brass flathead wood screws. Glue the button plugs in the counterbores.

Written by **Jan Hale Svec** with **Kevin Boyle**
Project design: **Kevin Boyle**
Illustrations: **Roxanne LeMoine**; **Lorna Johnson**
Photographs: **D. E. Smith Photography**; **Baldwin Photography**

'tail blazers

We're hot on the trail of the best through-dovetail jigs

Dating at least to ancient Egypt, the through-dovetail joint has stood the test of time as a durable and decorative method of joinery. Until relatively recent times, this icon of craftsmanship was meticulously and tediously fashioned by hand. Today's lucky woodworkers need only a jig, such as those featured here, and a router to crank out handsome and sturdy through-dovetails by the dozens.

About the joint chiefs in our test

To begin, we rounded up every jig that performs through dovetails. All consist of a template or templates that guide your handheld router through the cuts, and most also can make box joints and/or half-blind dovetail

Fast Facts

- Through dovetails often are used to adorn the joints of cases: a bookcase, blanket chest, or jewelry box, for example. For drawer-making, half-blind dovetail joints display the wedge-shaped tails while hiding the boxy pins from view.
- To maintain the high speed required for a clean-cut joint, use at least a 1½ hp router. Using two routers—one for cutting pins and the other for tails—speeds the process.
- The large base openings on some routers can catch on the ends of the guide fingers and steer your router askew. Guide bushings keep the support close to the bit, and so are less likely to catch on the template. Bearing-guided bits self-center, so you needn't rely on the bit being centered in your router base to make an accurate cut.

joints. One edge of the template navigates the bit for cutting the tails; the tapered slots in the other edge direct the bit for cutting the pins.

We'll focus on those jigs, but we also included two incremental-positioning fixtures that attach to your router table. Although not true through-dovetail jigs (we'll explain why later), these fixtures also are capable of making a number of other decorative through joints.

*(**Editor's note:** We opted not to test Porter-Cable's Omnijig because of its high cost. The 24" jig sells for $360 and can only do half-blind dovetails; to make through dovetails, you must buy an additional template for $160.)*

Do TD jigs get a bad rap?

Through-dovetail jigs have a reputation for being difficult to set up and use. Consequently, novice woodworkers may shy away from them. We're happy to say we found that reputation largely undeserved.

In fact, of all the jigs in our test, only the Craftsman 25450 took longer than about ten minutes to assemble and set up. That's because the Craftsman jig (unlike the virtually identical Vermont American 23461) comes completely unassembled. It took us about an hour to turn Craftsman's bags of parts into a dovetail jig.

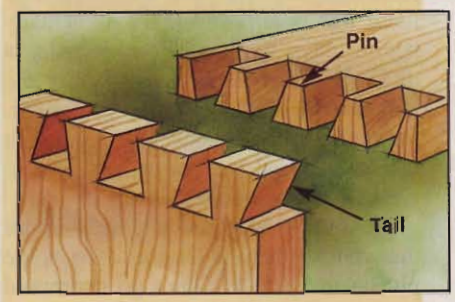
The Keller 2401 comes as a pair of aluminum guide templates—one for cutting pins, the other for cutting tails—that must each be attached to a 2×6 fence that you provide. (We used a length of 1¾" micro-laminated beam instead.) A line scribed on the bottom of each template shows where to align the fence.

The Katie Jig was ready to go right out of the box, but we checked the alignment of the tuning-fork shaped guides just to be sure. The remaining jigs required only minor assembly.

We marked all three pins for this photo, but you really only need to scribe one to accurately locate Keller's pin template.

Dovetail bits & pieces

If you're a spring chicken when it comes to through-dovetail joints, here's a quick primer on the parts. And, although you're free to break the rules, we've also included a few guidelines on which pieces belong where.



Tails. When viewed from the face of the workpiece, a tail looks like, well, the tapered back end of a dove. You shape them by routing with a dovetail bit, as shown *opposite*. For cases and drawers, cut tails in the side pieces; for a chest, you should cut them on the front and back pieces.

Pins. Routed with a straight bit, pins look like rectangles when viewed from the face of the workpiece. When building drawers, pins go on the front and back; on casework, the top and bottom; and on a chest, cut them in the side pieces.

Making ends meet

Thanks to the double-edged nature of the templates or guide fingers, pins and tails cut with these jigs can't help but align. For most of the jigs, you set a stop to register your workpiece, cut the tails, rotate the template or guide-finger assembly, and cut the pins. The Keller and Universal Jointer stray from this formula, but that's not necessarily bad.

Making dovetail joints with the Keller is a lot like cutting them by hand, but faster. And it could hardly be more simple: Eyeball the tail location, clamp the tail template in place, and rout the tails. Using the freshly cut tails as a guide, scribe the location of one pin on the end of the pin board, and line up the pin template on your marks, as shown at *left*. Clamp, rout the pins, and you're done.

Instead of a rotating template, the Universal Jointer uses template inserts

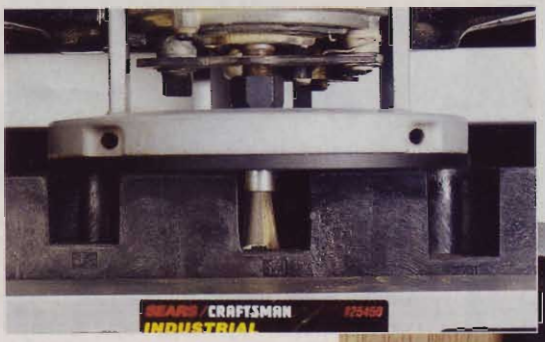
that fit into a template holder. After cutting the tails, you replace the tail insert (shown on bench in the photo *below*) with the pin insert. Rout one side of the pins, then flip the pin insert end-for-end, then rout the other side of the pins.

A fitting tribute

Although aligning pins and tails with these jigs is almost automatic, actually getting them to fit together becomes a different story. Step one—shaping the tails with your router—is pretty straightforward. Fitting the pins to the tails can take some trial and error (and a few pieces of scrap wood).

For routing tails, you only need ensure that you cut them at least as deep as the pin board is thick. Don't go overboard here: You don't want to waste too much time sanding the ends of the tails flush with the pin board when you're through. (About 1/64" extra is plenty.)

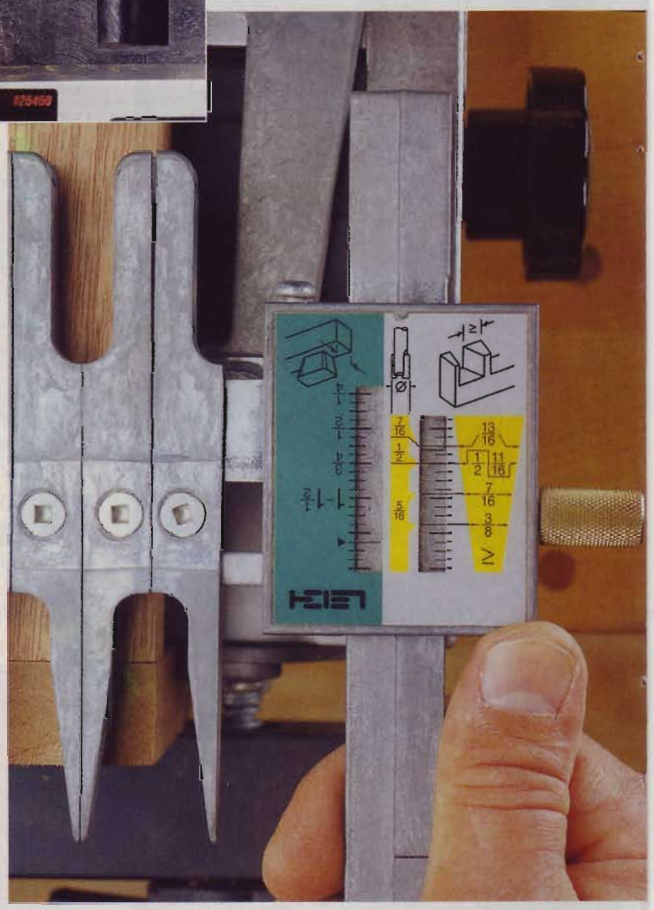
When setting your cutting depth, don't forget to include the thickness of the guide template in your calculation. To save you some head-scratching, the Craftsman and Vermont American jigs have pockets (*top* photo) on the front of the jig that help the process. They weren't perfect, but they got us in the ballpark (if not the infield) without any calculations, which we appreciated.



LEFT: Six pockets on the Craftsman and Vermont American jigs set the bit depth for dovetailing stock from 3/8–1" thick.

With the tails cut, it's time to fit the pins to them. Moving the pin template slightly forward on its fence widens the pins for a tighter fit; shifting it backward does the opposite.

Arguably the most elaborate system belongs to Leigh with graduated scales, shown at *right*, on each end of the template bar. These scales overlay index lines on the bar support to give you a handy visual reference when adjusting the template. Each end of the template moves independently, though, so we had to be careful to make both scales match to keep the template parallel to our workpiece.



ABOVE: To tweak the pin fit on the Leigh D-4, loosen the knurled brass knob and shift the template forward or back. The yellow scale is for through dovetails; the green for half-blinds when the template is oriented to cut that joint.

The Craftsman and Vermont American jigs use a single knob on the side to slide both ends of the template, keeping it parallel to the workpiece. But, they don't provide a scale, so fine-tuning the fit is by-guess-and-by-gosh. Still, we had little trouble fine-tuning the fit on our test boards.

Screw slots in the Keller pin template allowed us to adjust the template on the fence, but we never needed to: With the fence set to the scribed index line during assembly, the joint fit together perfectly. The Universal Jointer offers some latitude for adjustment; the Katie Jig, none. Nonetheless, we were very pleased with the fit of the joints made with these jigs.

Keep a screwdriver handy if you use the Universal Jointer to cut through dovetails. You must change the template three times for each joint.

Quality is job one

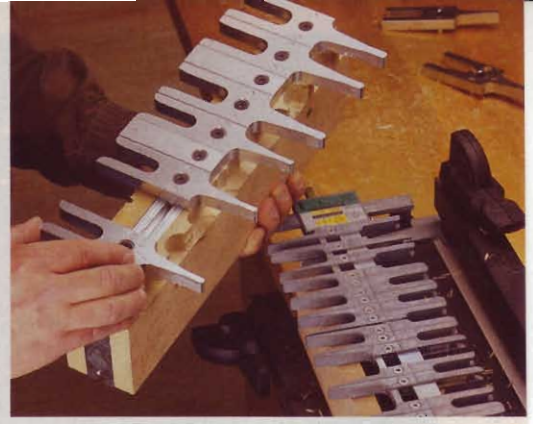
The hardness and grain of the wood, your router speed, and the sharpness of your bits are but a few of the factors that contribute to the quality of the joints made with a dovetail jig. But the jig itself can help or hurt in your quest for clean-cut pins and tails.

Just as a zero-clearance insert on your tablesaw reduces tearout, so does a backing board on a through-dovetail jig. Keller's and Katie Jig's fences back up your cuts very nicely, but we liked the Keller better for a couple of reasons.

First, the templates never move on the fence, so once you've cut into it, it will always prevent tearout. When you change the spacing of Katie Jig's guide fingers, you cut away more of the fence, as shown *top left opposite*.

Secondly, when it comes time to replace it, Katie Jig's fence is an odd

After using the Katie Jig with various tail spacings, we found that we'd destroyed the part of the fence that backs up the stock to reduce tearout.



Katie Jig's tuning-fork shaped guide fingers (in hand) move independently to vary tail-spacing; Leigh (on bench) splits the forks to allow variably sized and spaced tails.

thickness—.720"—and that thickness is the only control you have over the fit of the joint. Terry Hampton of Hampton House, the manufacturer of Katie Jig, told us that a user "can take any ¾" stock—which is usually less than a full ¾" anyway—and plane or sand it down to .710–.720" for a replacement fence if he or she needs to."

On the Craftsman, Leigh, and Vermont American jigs, you can clamp a backer board under the template to eliminate tearout, and this works pretty well. The Universal Jointer has no way to accommodate a backer.

Pin size and spacing: Control to the last d'tail

One complaint we hear from old-school woodworkers is that machine-cut dovetails are too perfect: identically spaced and all the same size. Of all the jigs in our test, only the Leigh D-4 gives you complete control over the width of the pins and the distance between them, satisfying the fussiest complainer.

If you look at the guide fingers on the Leigh jig, shown on the bench in the *top right* photo, you'll notice that each guide finger looks like one half of a tuning fork. Changing the spacing between the tapered ends of the fingers alters the width of the pins, and separating the parallel ends increases the distance between the pins. Besides replicating a hand-cut dovetail look (with amazing repeatability), you can create virtually any pattern of pins and tails you like.

In a similar fashion, Katie Jig's guide fingers, shown in-hand in the photo at *top right*, can be moved to spread the pins out. But, because you can't split the tuning fork, the pins will all be the same width. Hampton House offers optional guide fingers, to mix or match with the the ones that come with the jig, but they also require a different router bit.

As we already mentioned, cutting dovetails with the Keller is much like making them by hand. You can't change the pin width, but you can vary the spacing by routing individual pins and tails to match. (It's this same quality, by the way, that allows you to cut mating dovetails in the edge of curved stock, say, the arched

Tabletop TDs

Incremental-positioning jigs, such as the Incra 16" Ultra, shown at *right,* and the Jointech JS-1827, use a single dovetail bit to shape both the tails and the pins. But you can't cut a straight pin with an angled bit so the pins require a second router cut and a small amount of clean-up with a sharp knife or chisel. More importantly, they lack the complete pin-to-tail surface contact of a true through-dovetail joint.

Having said that, we must admit that these jigs are capable of producing some of the most mind-blowing joints you'll ever see, such as double-dovetails (a dovetail within a dovetail), double-double box joints, "box-tail" joints (a box joint within a dovetail), cornerpost dovetails, and other exotics. If you're into box-making and more concerned about dazzle than gluing-surface area, consider one of these jigs.

Both the Incra and Jointech systems are essentially high-tech router-table fences that snap to any 1/32" increment from the bit. A right-angle carrier rides along the fence keeping the workpiece perpendicular to the router tabletop while moving it through the bit, as shown *above.*

Pin size and spacing is determined by detailed charts in the manual and an extensive set of color-coded template strips, which mount to the fence carriage. Once you've calibrated the fence system to the center of your workpiece and set the correct bit depth, you clamp your tail boards to the right-angle carrier and cut the first tail. Slide the fence to the next mark on the template, lock it, make the next cut, and so on until you've cut all the tails.

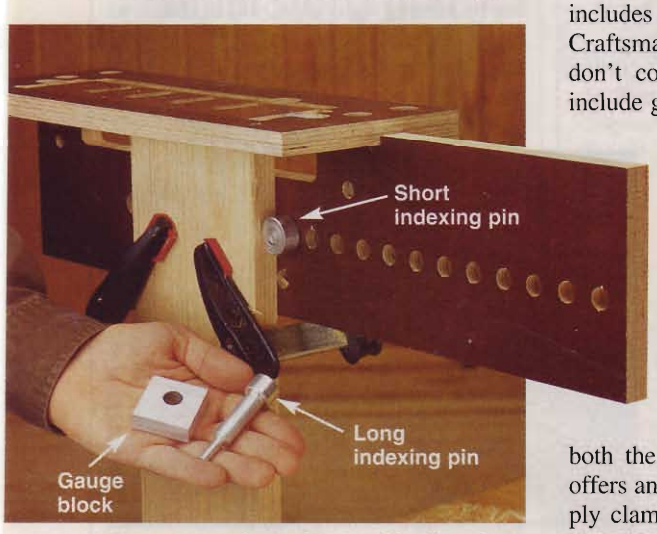
Next, you cut all the pins in the same manner, this time using a different set of marks on the template. Finally, you repeat these cuts with the pin board face-up and flat on the table. Performance-wise, we found little difference in ease of use, and none in the quality of the joints they produced.

top of a chest—the only jig in the test that can make that boast.)

The other product in our test that can make variably spaced dovetails is the Universal Jointer. However, the process of leaving out some cuts and constantly repositioning stops and the jig left our heads spinning.

A few more points before you buy

•***Go wide, go long.*** The width and thickness capacities of each jig are shown in the chart at the end of the article, but what about length? To a large degree, that's determined by how the jig, your bench, and your workpiece interact for the job.



If you wrote down the combination of stop parts and holes, you could come back to the Universal Jointer years from now and cut a perfectly mating joint.

The sky's the limit with the Keller, Katie Jig, and Universal Jointer. These jigs mount directly to the workpiece with clamps you provide. As long as you can reach it (and safely support both the stock and yourself), you can cut it. Katie Jig takes advantage of this arrangement by selling handles that mount to the jig: For shorter workpieces, you can flip the jig and workpiece upside-down to cut the joints on a router table.

On the other hand, the Craftsman, Leigh, and Vermont American jigs mount directly to your benchtop or to an oversized plywood base that in turn clamps to your bench. A clamping bar on the front of the jig holds the workpiece vertically in the jig for cutting. (We prefer Leigh's cam-action levers to the twist-to-tighten knobs on the Craftsman and Vermont American.) That limits the stock length to your bench height.

One other note regarding capacities: Some manufacturers offer larger and/or smaller versions of the jigs we tested. Katie Jig, for example, also comes in a Blanket Chest model (widths up to 26½") and a Junior model that works with ½"-thick stock up to 6" wide. Keller also sells a 16" capacity model (1601), a 36" model (3600), and a phenolic 15" model (Journeyman 1500).

•***Bits, bearings, and bushings.*** It's always interesting to see which of these necessary items the manufacturer includes with the jig. For instance, the Craftsman and Universal Jointer jigs don't come with bits. Craftsman does include guide bushings, but they only fit on a Craftsman router. Vermont American uses the same bushings as the Craftsman, but also sends along a universal router subbase that accepts those bushings.

•***Stops, in the name of dove.*** Except for the Keller, all of the jigs come with at least one work stop that fixes the location of your workpiece for both the tail cuts and pin cuts. (Keller offers an accessory stop, or you can simply clamp a scrapwood stop to the jig.) The Universal Jointer's stop system, shown at *left*, consists of three parts that, when used in various combinations, position the workpiece at any ⅛" increment along your tail board.

•***What else can you do?*** All of the jigs in our test also can be used to cut box joints, although you need to buy an additional template to do so on the Craftsman, Leigh, and Vermont American jigs. On the other hand, those three jigs also can do half-blind dovetails out of the box—the others can't. The chart at *right* lists the joints each jig can produce.

MANUFACTURER	MODEL	BITS INCLUDED?	OTHER JOINTS (1)	GUIDE TEMPLATE MATERIAL (2)	ROUTER-GUIDING SYSTEM (3)	
THROUGH-DOVETAIL JIGS						
CRAFTSMAN	25450	N	B*,H	GN	G	
KATIE JIG	7/16"	Y	B	AL	B	
KELLER	2401	Y	B	AL	B	
LEIGH	D-4	Y	B*,H,S	AL	B	
UNIVERSAL JOINTER	--	N	B,S,T	PP	G	
VERMONT AMERICAN	23461	Y	B*,H	GN	G	
INCREMENTAL POSITIONERS						
INCRA	16" Ultra	N	H,B, E,S	N/A	N/A	
JOINTECH	JS-1827	N	H,B,E S,T	N/A	N/A	

NOTES:

1. Besides though-dovetail joints, this product also can be used to cut:
   (B) Box joints
   (E) Exotic through-joints (double dovetails, etc.)
   (H) Half-blind dovetails
   (S) Sliding-dovetail pin
   (T) Tenons
   (*) Optional template required
2. (AL) Aluminum
   (GN) Glass-filled nylon
   (PP) Phenolic-coated plywood
3. (B) Bearing
   (G) Guide bushing
4. (*) Can be repositioned along board for wider workpieces.
   (**) Requires reversing template holder on fence.
5. E Excellent
   G Good
   F Fair

Keller 2401

Which to choose depends on how you use

You can't beat the sheer simplicity of Keller's 2401. The more joints we made, the more we kept coming back to this workhorse. Although you can't change the size of the pins, you can plant a dovetail anywhere you can fit the jig. In our opinion, you can't go wrong with this jig for day-in, day-out dovetailing.

On the other hand, you won't find another through-dovetail jig that gives you as much control over size and placement of pins as the Leigh D-4. When you figure in its ability to do half-blind dove-

A THOROUGH LOOK AT THROUGH-DOVETAIL JIGS

	CAPACITIES							PERFORMANCE RATINGS(5)					ACCESSORIES (6)						
	Minimum thickness using included bits	Minimum thickness using optional bits	Maximum thickness using included bits	Maximum thickness using optional bits	Maximum stock width (4)	Minimum center-to-center width	Minimum pin width	Ease of adjustment	Ease of tuning fit of joint	Manual clarity	Ease of use	Ease of setup	Standard	Optional	Warranty (years) (7)	Country of assembly (8)	Selling price (9)	Comments
	N/A	3/8"	N/A	1"	16"	1"	1/2"	F	G	G	G	F	G,HB	BJ	1	U	$140	It requires assembly, but once set up, this jig makes well-fitting joints. A good value. See Vermont American comments.
	1/4"	1/4"	3/4"	3/4"	12"*	13/8"	7/16"	E	G	G	G	E	S	B,F,H,S	1	U	$260	Virtually ready to use out of the box. Can make variably spaced dovetails. With optional handles, also can be used atop a router table. Also available in "Junior" model for smaller projects.
	1/2"	3/8"	1"	3/4"	24"**	13/8"	7/16"	E	G	E	E	E	--	B,C	20	U	$339	Operates on the same principle as hand-cut dovetails: Cut the tails, then use them to locate the pins. Simple, effective, and in some ways, one of the most versatile.
	1/2"	1/4"	13/16"	1 1/4"	24"	1"	1/4"	F	G	G	G	G	HB	BJ,G,I,M	5	C	$350	The only jig in the test that can cut variably sized and spaced dovetails at the same time. Manual is lengthy, but clear and complete. Also can cut Isoloc and other decorative joints.
	N/A	3/8"	N/A	7/8"	36"***	1 1/2"	1/2"	E	E	F	G	F	--	--	1	U	$239	A very precise jig that works best on pieces less than 18" wide. Bits may be harder to find, but manufacturer lists some sources in the manual.
	N/A	3/8"	N/A	1"	16"	1"	1/2"	E	G	G	G	F	BP	--	1	U	$185	This jig is virtually identical to the Craftsman 25450, except that it comes mostly assembled, with bits, and with a replacement base plate for using their guide bushings on your router.
	N/A	1/8"	N/A	3/4"	15"	1/2"	1/4"	G	N/A	F	F	F	TL	--	1*	U	$290	Not a true through-dovetail jig, but it can cut the joint. Router table-mounting reduces maximum length of workpiece you can work with this type of jig. Excels at decorative joints, such as double-dovetails, double-double dovetails, double box joints, etc.
	N/A	5/16"	N/A	7/8"	15"	1/2"	1/4"	G	N/A	F	F	F	TL	--	5	U	$349	Similar to Incra 16" Ultra in function, design, and joint quality. We liked the template organizer in the back of the owner's manual.

6. (B) Alternate bits
   (BJ) Box-joint template
   (BP) Router base plate
   (C) Production clamp kit
   (F) Alternative finger guides
   (G) Template guide bushings
   (H) Handles for router-table use
   (HB) Half-blind dovetail template
   (I) Isoloc-joint templates
   (M) Multiple mortise-and-tenon attachment
   (S) Guide-finger spaces
   (TL) Template library
7. (*) Lifetime warranty on racks
8. (C) Canada
   (U) United States
9. Prices current at time of article's production.

For more information:

Craftsman
Visit your local Sears store.
www.sears.com/craftsman

Jointech
800/619-1288
www.jointech.com

Leigh
800/663-8932
www.leighjigs.com

Universal Fixtures
724/733-8644

Hampton House (Katie Jig)
317/881-8601
www.katiejig.com

Keller
800/995-2456
www.kellerdovetail.com

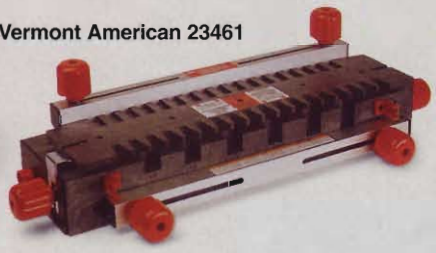
Taylor Design (Incra)
972/418-4811
www.incra.com

Vermont American
800/742-3869
www.vermontamerican.com

For specifications on other types of tools, click on "Tool Comparisons" at www.woodmall.com

Leigh D-4

Vermont American 23461



tails, box joints (with optional template), sliding dovetails, and more, it's arguably the most versatile in the test, and should handle most of your joinery needs for a very long time.

For occasional use, go with the Vermont American 23461. It produces well-fitting joints for about $150 less than the Leigh (but without the ability to vary size or spacing). It also comes mostly assembled, and with a router-base adapter and bits, unlike the similar Craftsman 25450 that costs $45 less.

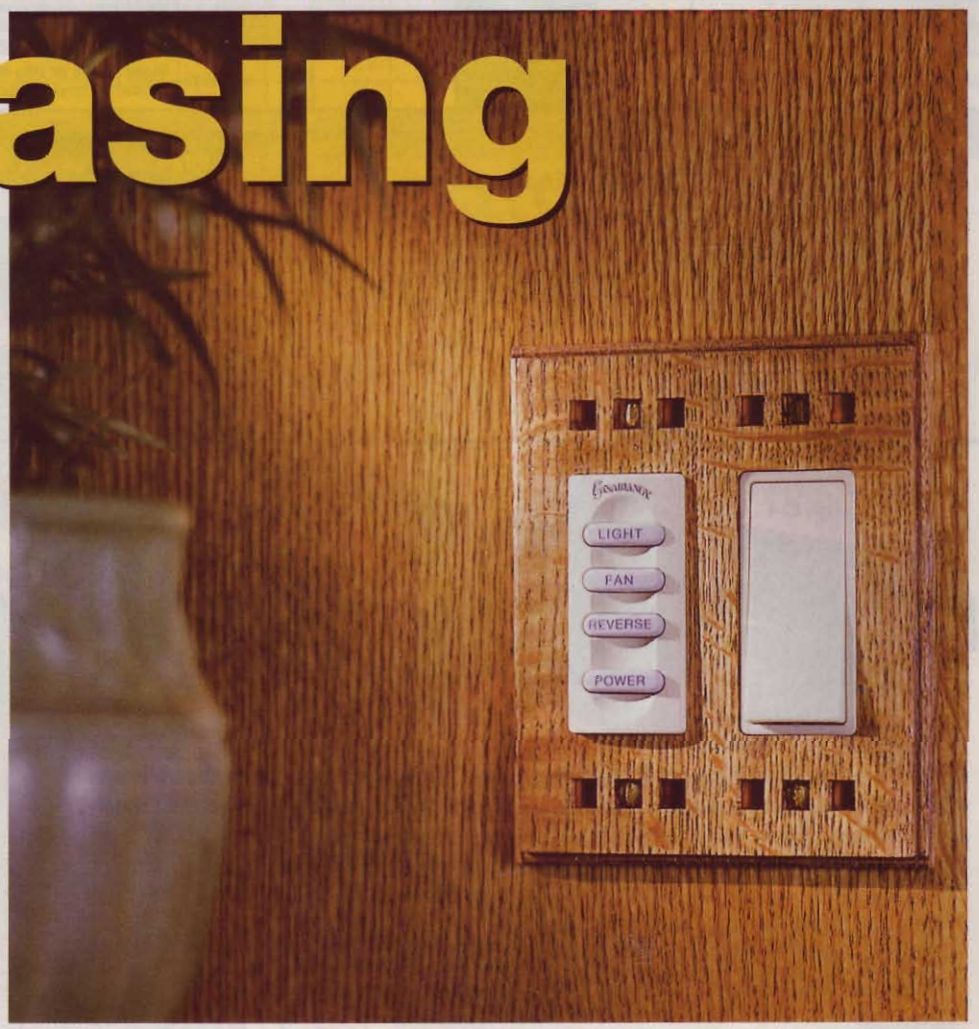
Written by **Dave Campbell** with **Dave Henderson**
Photographs: **Baldwin Photography**
Illustration: **Brian Jensen**

It's your turn to talk 'tails

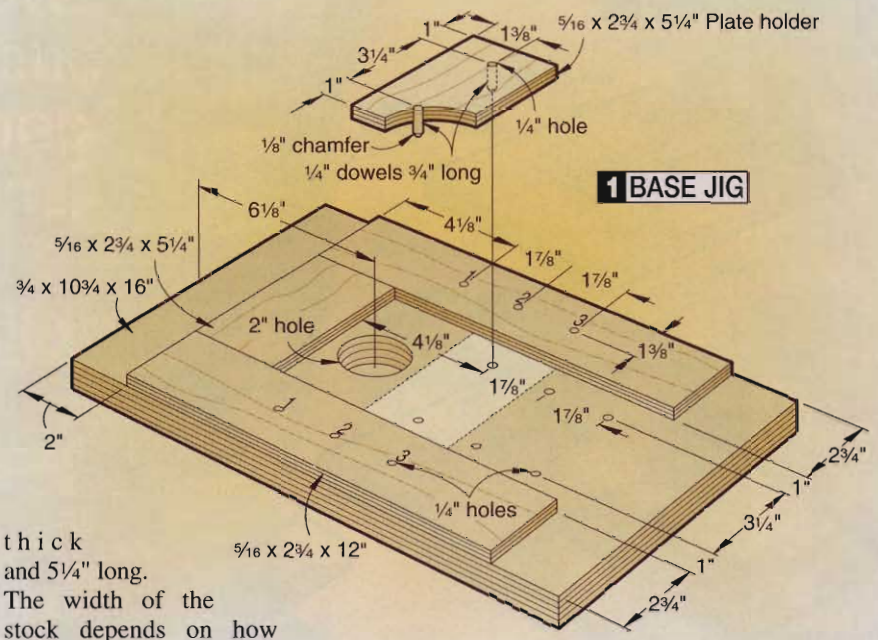
Agree or disagree, we'd like to know your thoughts on the through-dovetail jigs in our test. We've set up an Interactive Tool Review at www.woodonline.com for you to sound off. Besides your fellow woodworkers, the manufacturers of the jigs also will offer their two cents.

great grates and pleasing plates

You just can't find hand-fashioned accents like these in stores. Here's how to make them yourself.



The family-room renovation in the April issue had so many custom features that we couldn't share all of them with you in that single issue. Now, we can show you how to make the wooden wall plates and adaptable air grills that helped turn that dated space into a woodworking showplace. You can size the air grills to fit any opening, and even use them for projects that have nothing to do with your home's heating, such as shower grates, hot plates, or welcome mats. Let's start with the wall plates.



Pleasing plates

These plates work for light switches and receptacles with the same rectangular shape (sometimes referred to as "decorator" or "designer" switches and receptacles). We show all of the plans you'll need for one-, two- or three-gang electrical boxes. If you have an outlet with four or more switches ganged together, you easily can extend the dimensions we give you for the three-gang plate to prepare the necessary stock and jigs.

Once you make a few simple jigs, you can churn out plates that adapt to most any interior by changing the wood species or varying the edge treatment. For example, we'll show you how to make plates like the one in **Photo A**. That cherry plate has a chamfered edge, but you also could rout a cove or round-over instead. And, by taking the basic procedure a few steps further, you can produce plates that have a distinctive mission look (more on that later).

A We oriented the grain horizontally on this cherry wall plate.

Note: *To make wall plates, you'll need a couple of simple jigs. First, build the base jig and plate holder shown in* **Drawing 1**. *You'll need to resaw or plane to thickness the 5/16" material. Attach the three thin pieces of the base jig to the ¾" plywood with glue and finish nails. The plate holder is adjustable and does not mount permanently to the base jig.*

Begin with blanks, end with handcrafted plates

1 No matter what size wall plate you make, you need stock that's 5/16" thick and 5¼" long. The width of the stock depends on how many receptacles or switches are covered by the plate—provided you orient the grain vertically on the plate. One-gang plates should be 2¾" wide, two-gang plates 4⅝" wide, and three-gang plates 6½" wide. If you can't find stock wide enough for boxes with three- or-more switches, or don't want to glue up stock to width, you may want to orient the grain horizontally.

2 Make two copies of the appropriate plate pattern from the *WOOD PATTERNS®* insert, and apply them to the top and bottom of the plate blank with spray adhesive. Even if you're not making a mission-style plate, you'll need the pattern to locate the ⅛" screw holes.

Now, place the plate blank pattern-side-down in the *base jig* and position the *plate holder* so it butts against the blank. The blank should fit snugly, but not so tightly that it proves hard to remove.

3 Depending on your needs, build one or all of the *single-, double-, or triple-gang plate template(s)* shown in **Drawing 2**. Reinforce the glued template butt joints with biscuits, dowels, or pocket screws.

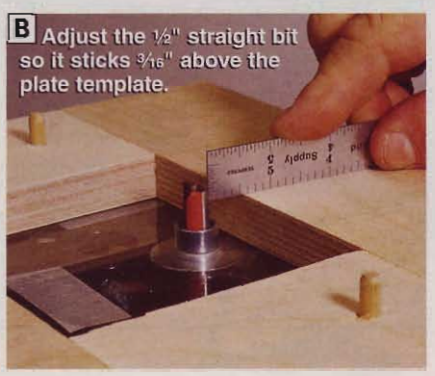
4 Put a ½" straight bit and ⅝" bushing into a handheld router.

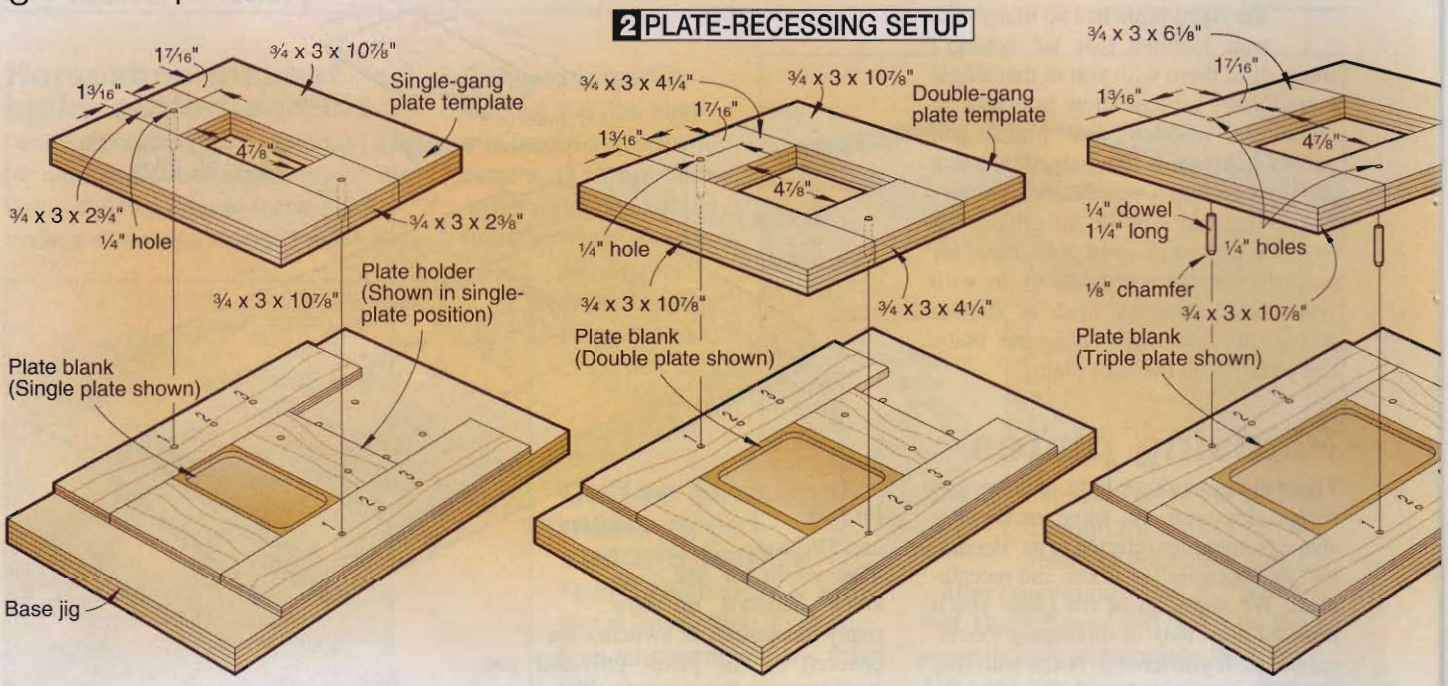
Note: *Depending on your router and the size of wall plate you make, you may need to add an oversized auxiliary subbase to your router's base. Your router's subbase must be large enough to span the opening in the plate template you'll use in the following steps.*

For single plates, you'll need a router subbase at least 6" in diameter; double plates require a subbase at least 8" in diameter; and triple plates require a 10"-diameter subbase. We made our auxiliary subbase from ¼" clear acrylic. After drilling a hole in its center large enough to fit around the ⅝" bushing, adhere it to the router's subbase with double-faced tape.

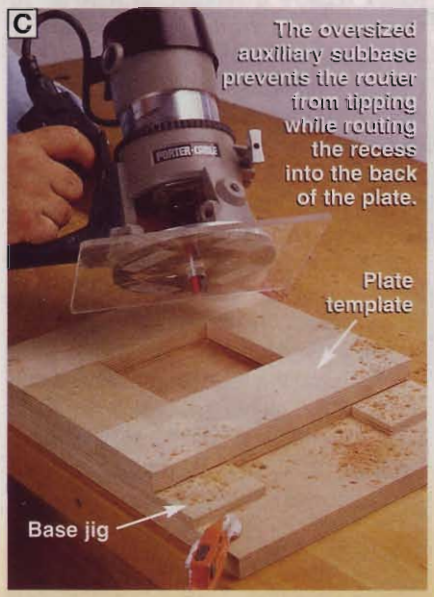
5 Turn your router upside-down, place the *plate template* pin-side-up on the router's subbase, and adjust the straight bit so it sticks 3/16" above the template, as shown in **Photo B**.

6 Position the plate template on the base jig, aligning the plate-template pins with the "1" holes, as shown in **Drawing 2**. Clamp the base jig to a benchtop, and rout a 3/16"-deep recess into


B Adjust the ½" straight bit so it sticks 3/16" above the plate template.



the back side of the plate blank, as shown in **Drawing 3** and **Photo C**. Rout around the inside edges of the template, then clean out the middle of the recess.


C
The oversized auxiliary subbase prevents the router from tipping while routing the recess into the back of the plate.
Plate template
Base jig

7 Build the *plate-hole template* shown in **Drawing 4**. Replace the plate template with the plate-hole template, aligning its pins with the "1" holes in the base jig.

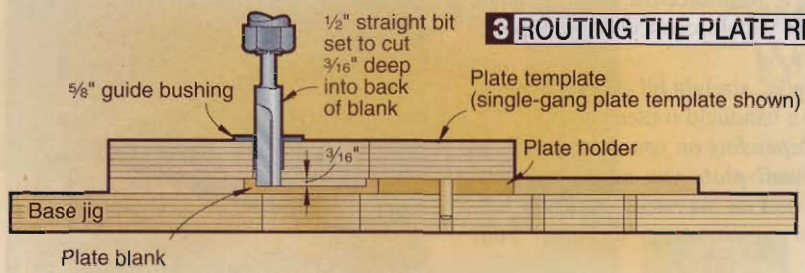
8 Replace the ½" straight bit with a ¼" straight bit, and leave the ⅝" bushing in place. Adjust the bit so it cuts completely through the plate blank when you set the router on top of the plate-hole template. See **Drawing 5**.

9 Rout around the inside edges of the plate-hole template to produce a switch/receptacle hole, as shown in **Photo D**. Repeat this step with the plate-hole template aligned with the "2" holes for double plates, and the "2" and "3" holes for triple plates.

10 If you are making mission-style wall plates, skip to the next section. If you are *not* making the mission-style wall plates, you're nearly done. Simply remove the plate blank. (Use the 2" hole to push the plate out of the base jig.) Cut a piece of aluminum flashing that fits into the recess. Place the aluminum piece into the recess, and trace the shape of the plate hole onto the aluminum. Cut out the marked hole, staying just outside the traced lines, with a metal-cutting scrollsaw blade.

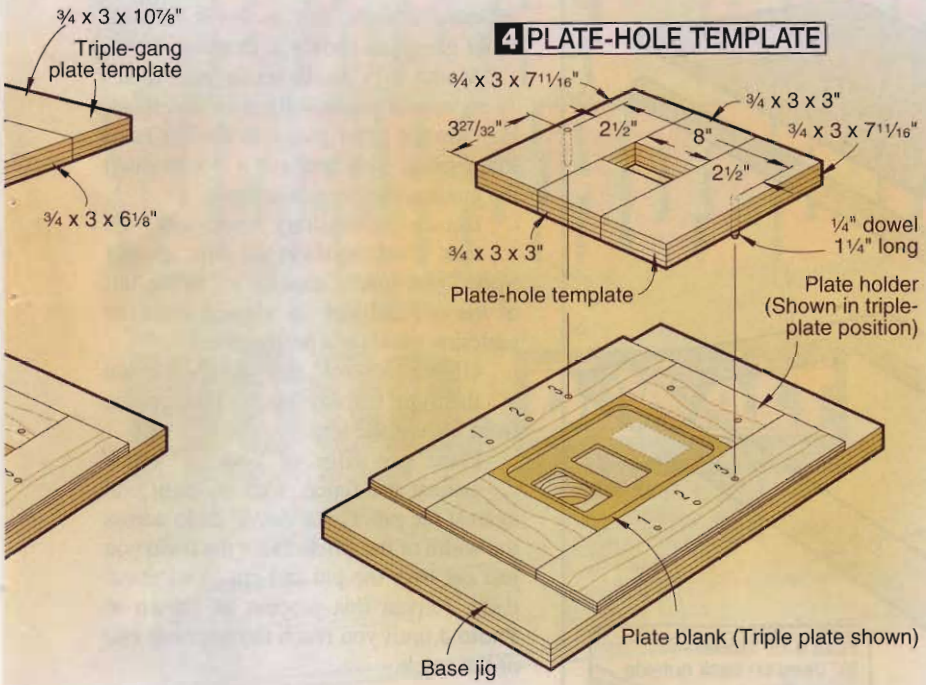
11 Apply a coat of epoxy to the recess, roughen up one surface of the aluminum with 80-grit sandpaper, and adhere the roughened aluminum surface to the recess.

12 Drill 11/64" countersunk holes, where marked on the paper pattern. The countersinks should be deep enough to accommodate the head of a #6×½" ovalhead electrical-fixture screw. (You'll find these screws available with heads of various colors such as black, white, almond, brown, brass, or bright zinc.) Remove the paper pattern and any adhesive residue. Rout the edges as desired, sand, and apply finish.


3 ROUTING THE PLATE RECESS
½" straight bit set to cut 3/16" deep into back of blank
⅝" guide bushing
Plate template (single-gang plate template shown)
Plate holder
3/16"
Base jig
Plate blank

How to add the mission-look to the wall plate

1 Remove the wall-plate blank from the base jig. Drill a blade-start hole in the center of each tiny square on the pattern, and cut out the squares using a scrollsaw, as shown in **Photo E**.



2 With a straight bit and router table, rout a ⅛" rabbet ⅛" deep around the edge of the plate, where marked on the pattern. See **Photo F**. Remove the paper pattern and any glue residue.

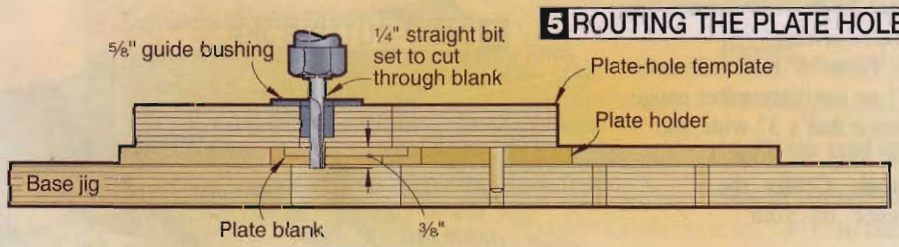
D Rout around the inside opening of the plate-hole template to cut the switch/receptacle holes into the plate.
Plate-hole template
Base jig

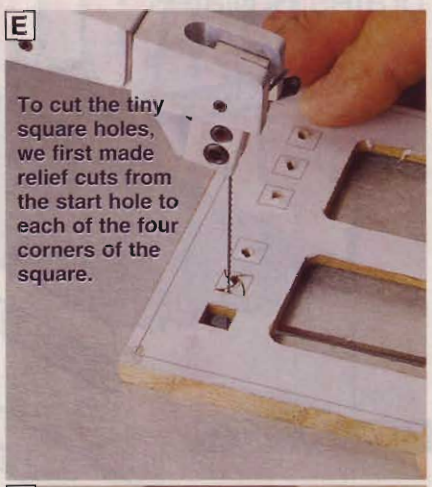
3 Cut a piece of .025" copper sheet that fits into the recess on the back of the plate.

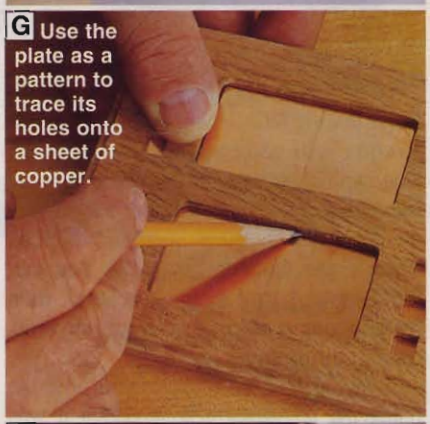
4 Place the copper sheet into the recess (no epoxy), and mark the switch/receptacle hole with a pencil, as shown in **Photo G**. Also mark the middle square in each set of three squares.

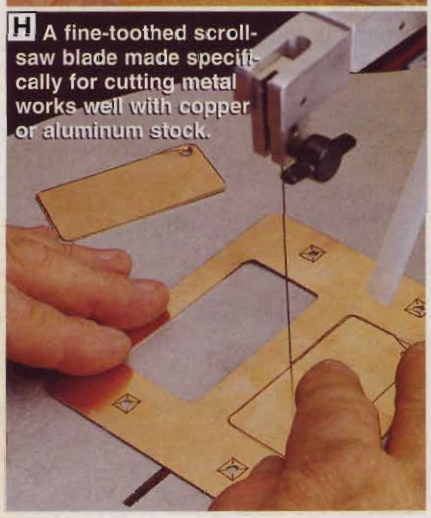
5 Remove the copper sheet. Draw diagonals to determine the centers of the marked squares, and drill ⅛" holes at their centers. Cut out the switch/receptacle openings using a scrollsaw and metal-cutting blade. See **Photo H**.

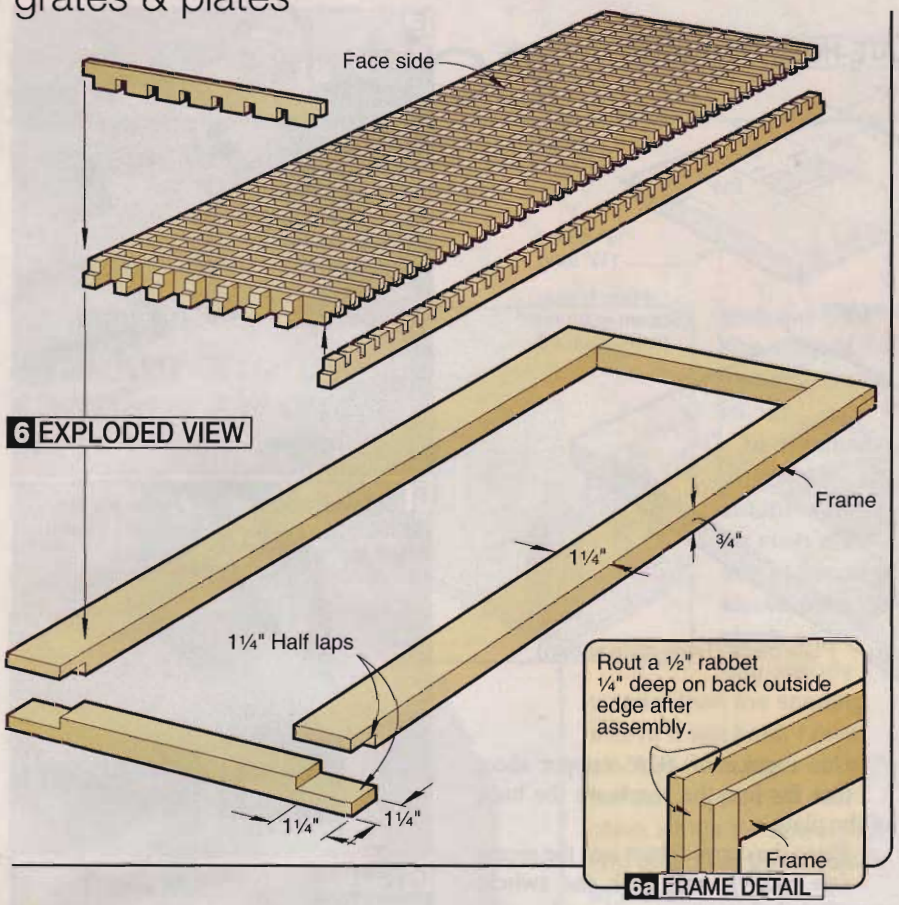
6 Apply a coat of epoxy to the wall-plate recess, roughen up one surface of the copper sheet with 80-grit sandpaper, and adhere the roughened surface to the recess. Sand and apply finish to the wall plate. Use #6×¼" brass flathead screws to mount the plates to your switches or receptacles. (The flared edge of the screw head will indent the copper as you tighten the screw.)











6 EXPLODED VIEW

6a FRAME DETAIL

Great grates

Most homes built in the past 50 years or so come with some pretty blasé air vents. The typical metal, louvered variety are inexpensive and practical, but they do little for your home's aesthetic appeal. Enter these wooden air grills. You can build several in a single weekend, then install them in place of your hot-air vents or cold-air returns.

In this article we'll show you how we made the air grill on *page 68* — it was featured in the April family-room renovation. You can modify these grates to suit many situations. For example, the one in **Photo I** was designed to emulate old metal grates in a 1920s home.

I This grate was adapted to imitate the look of a metal grate in an older home.

The secret's in the prep work

Note: *To build a grill and surrounding frame like the one in* **Drawing 6**, *you'll need two pieces of stock (we used red oak):*

- *One piece of ½" material for the grill that's at least 1" longer and wider than the grill opening.*
- *One piece of ¾×1¼" material long enough to go around the grill. Keep in mind that the width and length of the air opening has to be in ¾" increments, so you may need to adjust the width of the ¾" material to fit your particular duct opening.*

1 From ¾" material, make an auxiliary miter gauge fence that's 3" wide and as long as your ½" stock. Center the fence on your tablesaw's blade and mount it to your miter gauge, as shown in **Drawing 7**.

2 Mount a ¼" dado set in your tablesaw, and adjust it for a ¼"-deep cut. Position the miter gauge in the left-hand miter-gauge slot, and cut a slot through the auxiliary miter gauge fence.

3 Detach the auxiliary fence, and reattach it so the dado set cuts another ¼×¼" slot spaced exactly ½" to the left of the original slot (as viewed from the tablesaw operator's perspective).

4 Glue a ¼×¼×1" pin into the slot on the right, with the pin sticking out the front face of the fence.

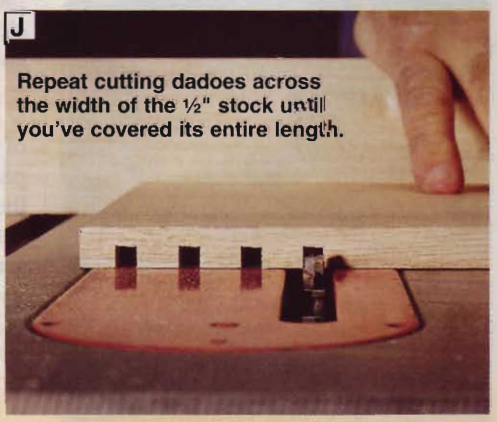
5 Place one edge of your ½" stock against the fence, with its right end against the pin. Cut a ¼×¼" dado across the width of the stock. Place the dado you just cut over the pin and cut an identical dado. Repeat this process as shown in **Photo J** until you reach the opposite end of the stock.

Now, cut the strips that make up the grill

1 Remove the miter gauge, replace the dado set with a ripping blade, and set the rip fence ¼" from the blade. Rip a piece of scrap stock to ¼" wide and test the fit of this piece in the dadoes of your ½" stock. Adjust the rip fence until your test pieces slip easily—but not sloppily—into the slots.

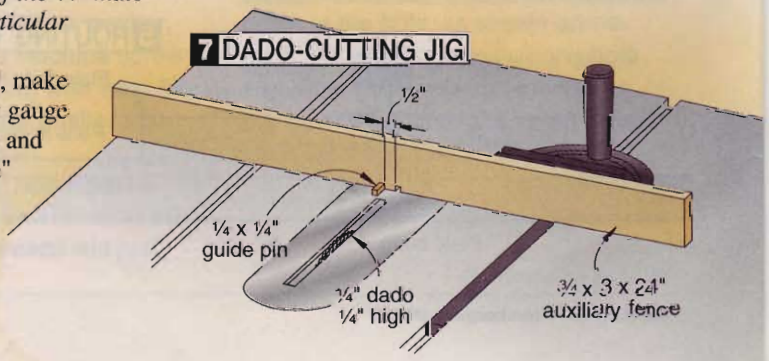
2 Rip the dadoed stock into strips, as shown in **Photo K**.

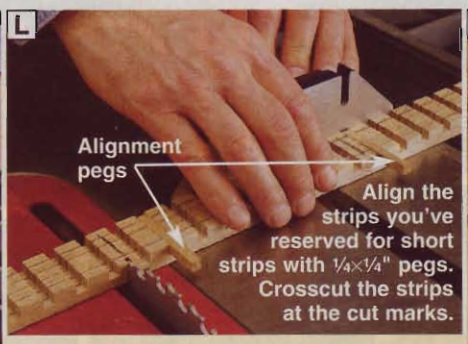
J

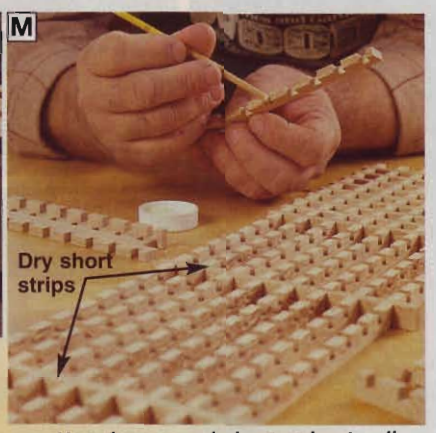


Repeat cutting dadoes across the width of the ½" stock until you've covered its entire length.

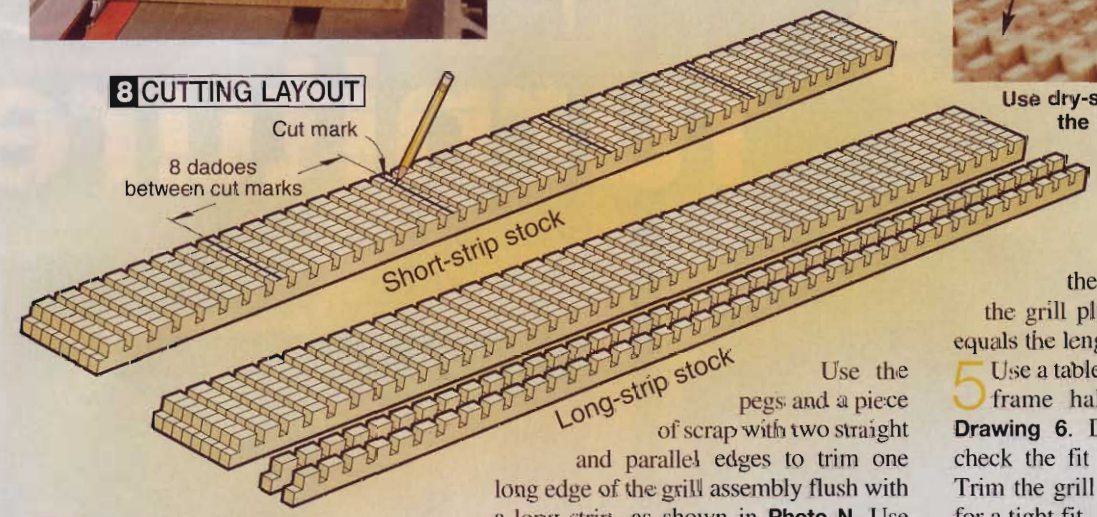
7 DADO-CUTTING JIG







Use dry-spaced short strips to align the long strips as you glue the short strips into place, starting at one end.



3 Space the cut strips ½" apart to determine how many long strips you'll need for your air grill. Take note of how many long strips you've reserved, and set them aside. Save the others for cutting into short strips in the next step.

4 Line up the strips edge-to-edge that will become short strips. Starting at one end of these strips, count over the number of dadoes that matches the number of strips you saved for long strips. Make cut marks across those strips, as shown in **Drawing 8**.

5 Align the dadoes on these strips by placing ¼×¼" pegs into every sixth or seventh dado. Crosscut the strips into shorter lengths using a miter gauge, as shown in **Photo L**.

Let's assemble the grill

1 Lay out the long strips, notch-side-up, on a flat surface, and space them apart with a few unglued short strips, as shown in **Photo M**. Starting at one end of the long strips, glue the short strips into place, pulling out the dry short strips as you go. Use an ⅛" dowel or paint brush to apply glue to each notch.

2 After the glue dries, cut two ½×½×3" pegs that fit into the holes in the grill. Use the pegs and a piece of scrap with two straight and parallel edges to trim one long edge of the grill assembly flush with a long strip, as shown in **Photo N**. Use double-faced tape to help hold the scrap straightedge onto the grill.

3 Remove the pegs and straightedge. Trim the grill's opposite long edge by holding the just-cut edge against the fence. Use a miter gauge to trim the ends. Sand the face side of the grill (the side with continuous short-strip edges) using a random-orbit sander.

4 Cut the frame pieces from the ¾" stock. In the case of our 1¼"-wide stock, the length of the rails equals the width of the grill plus 2½". The stiles' length equals the length of the grill plus 2½".

N A straightedge aligned by pegs and held down with double-faced tape will help you flush-cut the short-strip ends.
½×½×3" pegs

5 Use a tablesaw and dado set to cut the frame half lap joints, shown on **Drawing 6**. Dry-clamp the frame and check the fit of the grill in the frame. Trim the grill or the frame as necessary for a tight fit.

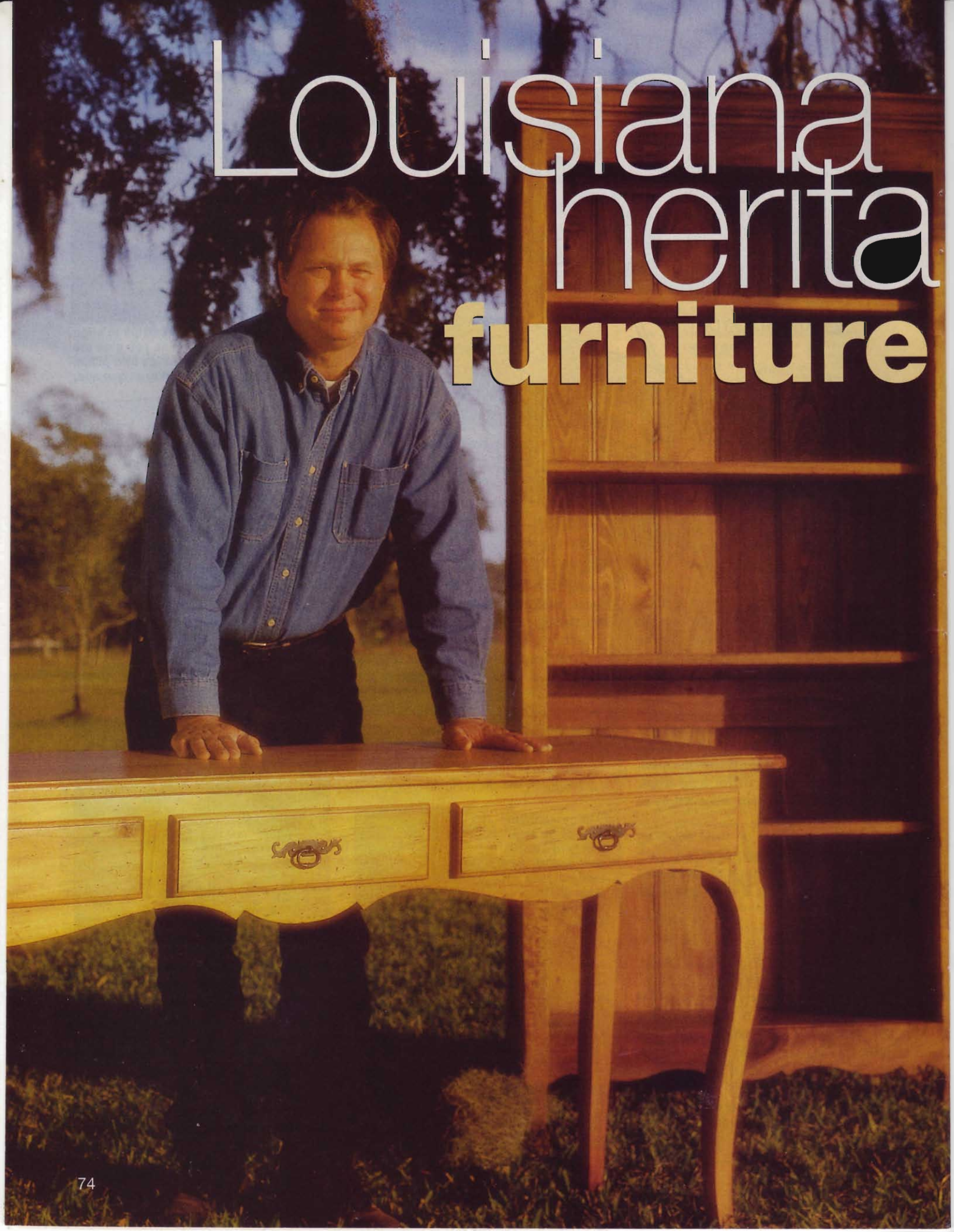
6 Place the grill on top of a ⅛"-thick spacer just smaller than the grill in width and length. Apply glue to the half lap joints and along the frame edges that contact the grill. Assemble the frame around the grill by first clamping across its width. Remove the spacer, then clamp each corner to secure the half laps. Add another clamp across the length of the assembly. See **Photo O**.

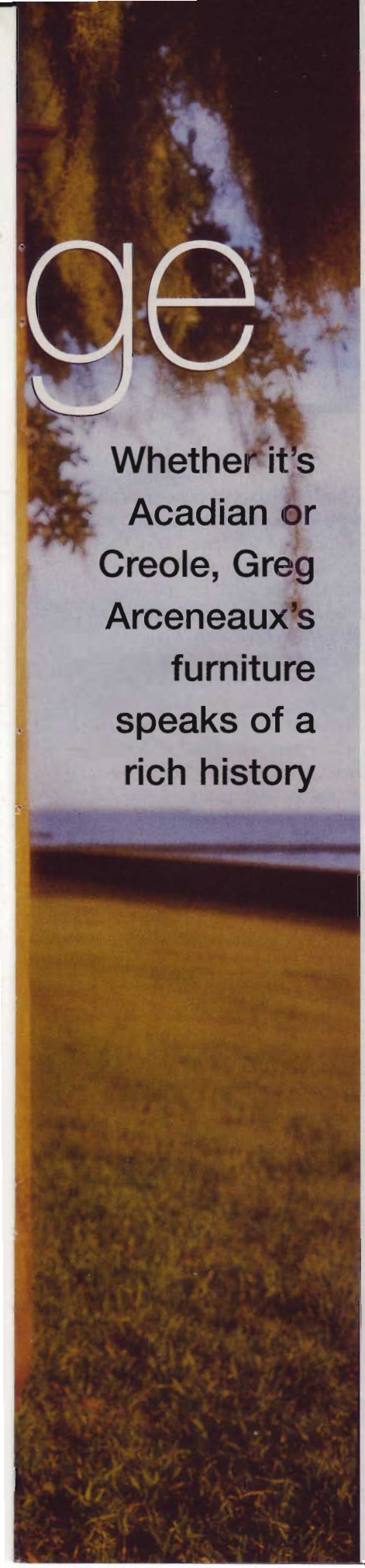
O Use an ⅛"-thick spacer to center the grill in its frame. Apply clamps that hold the frame joints and grill in place.
⅛" hardboard spacer

7 If necessary for mounting purposes, rout a ½" rabbet, ¼" deep on the back side of the frame, as shown in **Drawing 6a**.

Written by **Bill Krier** with **Jim Downing**
Illustrations: **Roxanne LeMoine; Lorna Johnson**
Photographs: **Baldwin Photography**

Louisiana herita furniture





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Whether it's Acadian or Creole, Greg Arceneaux's furniture speaks of a rich history

Louisiana's culture and people are as diverse—and sometimes mysterious—as gumbo ingredients. Discovered and claimed by the French in 1682, the vast area of Mississippi River Valley, bayous, and coastal plain that became Louisiana was influenced at times in its history by the Spanish, then American settlers after the Louisiana Purchase in 1803. Between 1760 and 1790, nearly 17,000 French people from Acadia in eastern Canada arrived, driven from their homes by the British. All the while, trickles of immigrants from Western Europe, and even Haiti, Jamaica, and other islands filtered in to blend a rich heritage.

Covington, Louisiana, craftsman Greg Arceneaux, 50, traces his ancestry in the state to the early 1700s, when long-ago relatives from French Canada settled on land grants from the French government. To him, the state's history and culture aren't as muddled as jambalaya.

"Creoles are descendants of the original French explorers and French-speaking Spanish colonists," he explains, "and usually represented the upper classes in old New Orleans and South Louisiana for nearly 200 years. Acadians are those whose French families originated in English Canada—basically owing their living to fishing and farming. Now, their descendants are what most people refer to when they say 'Cajun.' Anglos recall an American-English heritage."

Utilitarian art

Greg, now known in the state for the Louisiana-heritage furniture that comes out of his five-man workshop, began his woodworking career as an art student. "I went to Louisiana State in the early seventies with art in mind," he says. "Once there, I focused on sculpture. My teacher was a true artist in wood, so from him I did learn about hand and power tools and how to use them. But after two years, I realized that art alone wasn't fulfilling enough. I wanted to do something that impacted people's daily lives, not just the lives of those who appreciated art. Eventually, I came to the conclusion that furniture had the same artistic quality to it as sculpture, but it was utilitarian, too."

Even at that point, though, Greg was designing furniture in the rustic style. So when he left school to "deal with the real world" as a carpenter's apprentice, he set up a small shop in Lafayette and began building what he had designed. "With my Dad's help, I got a radial-arm saw, a circular saw, and a few hand tools; all I needed for rustic furniture," he recalls. "My first chairs were made from cherry saplings with the bark on—all mortise-and-tenon joinery. Then, because there's a tradition in Cajun country of using 'hide' seats—stretched rawhide with the hair still on—I took those chairs to an old man to have them done in black and white cowhide."

Greg's desire to further understand how furniture was made grew as he worked. He learned what he could, where he could, and kept on building, buying tools

Liz, Greg's wife and partner, studies a furniture reference book at the Creole-style, cypress dining table. The buffet, small chair, and box behind her are all based on early Louisiana pieces.

Greg freehands cypress through the bandsaw to rough out a cabriole leg.

as needed. Finally, he abandoned his carpentry to focus on woodworking. "But I was just scraping by making furniture and doing some millwork, like tapered posts for porches," he remembers. "Then I got a job at the natural history museum in Lafayette as head of exhibits," Greg says. "I built the bookcases, library tables, display cases, shutters, and did trim work. It ended up being 10 years of really great experience."

From there, Greg went on his own once again, building furniture of his design as well as commissions. "That's when I really became curious about heritage furniture. It was a time of a cultural rebirth of the French tradition in Louisiana," he recalls. "A lot of people in my generation saw that rich culture being eroded, the very thing that made Louisiana special.

"My family had been in Louisiana for centuries, but I really hadn't been truly aware of that wonderful heritage until then," he continues. "And I was, by definition, really a Creole."

A heritage discovered

"Even as a high school student I liked antiques," comments Greg. "Yet I didn't see much old French-style furniture around—meaning Acadian and Creole. (See sidebar *below*, "Acadian and Creole: What's the difference?") But I have to say that the distinctions between the two are ones that I draw. Historians may not have the same conclusions because I don't think the styles have been studied that much.

"Anyway, I wondered where it was," he continues. "It turned out that what was left was mostly in museums, plantations, and other historic sites. My theory about why there is so little left is that the Mississippi River Valley has always been prone to flooding, and the early French settlers lived along the rivers. Therefore the furniture suffered. And the way furniture was passed down also differed a lot from what is done today.

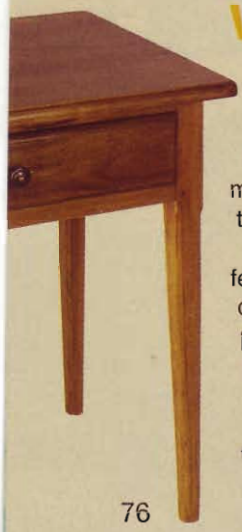
"People back then didn't want to inherit their parents' or grandparents' stuff because they believed that their spirits came with it," he recants. "I've read and heard about people piling belongings up and burning them! Some also got stashed in barns. In fact, many of the finest Creole and Acadian pieces have been found in barns under a pile of old oil cans. And of course, the weather and insects took their toll, too, especially in south Louisiana."

Furniture that recalls the past

"It was only in the last 10 years or so that I seriously focused on developing this Louisiana style of furniture," says Greg "Before then, I was building anything to help me make a living."

In the late 1980s Greg was instrumental in forming the Louisiana Furnishings Industry Association. For an annual meeting, the group brought in Thomas Moser, the Maine designer and furnituremaker renown for his Shaker-inspired pieces. Greg and his wife Liz became good friends with Thomas Moser, as they still are today. "He really helped me focus on what was necessary to create a distinctive furniture line," says the craftsman. "I give him credit for helping me

Acadian and Creole: What's the difference?



Greg likes to call his pieces "American French" or "Creole- and Acadian-inspired." He explains: "It's a distinct style. My Creole pieces have aspects of French Provincial furniture, but not all of the intricate moldings and carvings. For instance, I like the curve of the cabriole leg in the Creole pieces and the sense of motion that it creates (see photo *right*). You get the feeling that the piece could get up and walk away. You don't get that out of the angular, more simple Acadian pieces (see photo *left*). They reflect the rural, agrarian nature of Acadian life. Creole pieces also usually have ornamentation in the form of a scalloped apron on an armoire, table, or case piece," he points out. "There's this essence of Old World design, but the focal point is the wood that was available in the New World."

develop furniture that has become distinctive and recognizable.

"I think early Louisiana furniture is a beautiful form, and fairly classic," he adds. "With its simple lines, it stands up well with traditional styles and also mixes easily with contemporary because of the simple detail."

For his line of furniture that ranges from $400 for a lamp table to $12,000 for an armoire, Greg employs many of the same woods that early Louisianans would have used. In his shop you'll find stacks of cypress—dense "sinker" stock from recovered sunken logs; recycled boards sawn from building timbers; and young, second-growth wood. Then there's cherry, longleaf pine, walnut, hickory, and pecan. Some mahogany occasionally shows up, too. It would have been available in 18th-century New Orleans because of the city's seaport stature.

Missing are the now noncommercial woods that would have been put to use. "Mulberry went into a lot of chairs," Greg notes, "and redbay became furniture, but you can't find it now. And oak, although available, was hardly ever used back then."

Greg, however, despite the other wood he has on hand, bases his furniture line on cypress. "Here, people are very taken with cypress," he points out. "At one time, the trees were huge—150' tall with trunks 18' in diameter. And what amazes me is that they cut them all down—all gone by the early 1930s. Then the cypress cutters moved to the Pacific Northwest because they had the technology to cut big, buttressed trees. Why, we don't even have some old trees protected in a park somewhere so people could see what a 1,500-year-old tree looks like. A big tree like that is far more majestic than any furniture I could ever build."

John Thomson, production manager, cuts tenons on the shop-built tenoner, a benchtop tablesaw fitted with a split dado set.

Square pegs of pecan pin the mortise-and-tenon joints in Greg's furniture.

Joinery from days of old

Although Greg strives for authenticity in his joinery, including the much relied on mortise-and-tenon, it's not always feasible. "We do use biscuits in edge-joining a tabletop, for instance," he admits, "but they're principally for alignment. And why not? I think that Chippendale would have used a router had they been available back then. As a craftsman as well as a business person, I've got to try and produce the product in the most efficient way possible without impinging on its integrity. And I can feel good about doing that."

In his eighties, Charlie Berger still puts in half days at the shop. Here he calculates a tenon cut on a pecan chair.

A close look at Greg's furniture reveals two of his joinery trademarks, neither of which result from modern power tools. First, there's the pegged tenon, shown in the closeup photo *above*. "The square peg of pecan provides a mechanical bond to the mortise-and-tenon," he advises. "It's a little bit of insurance as well as a decorative element. The customers feel reassured when they see that peg."

According to Greg, square pegs also add to his furniture's period look. " On many of the old pieces, the pegs were square," he says, "because dowels are a comparatively recent development. I do like turned pegs, though, but they take time."

The second trademark is the dovetail. "All of our drawers have hand-cut dovetails. They take longer than machined ones, but they're our signature," Greg notes. "And unlike English dovetails, which have real fine necks, ours are more like the French. They're large and not as refined. In fact, we may use only one on a drawer side."

Building furniture in a climate known for its humidity begs a question regarding joinery and wood movement. Greg's response is a studied one. "It's not unusual for us to have weeks of 100 percent humidity, and that causes problems because wood's natural tendency is to absorb moisture when humidity is high, and give it off when it's low," he says. "But as long as we engineer properly, we don't have problems. Yet, if we were to

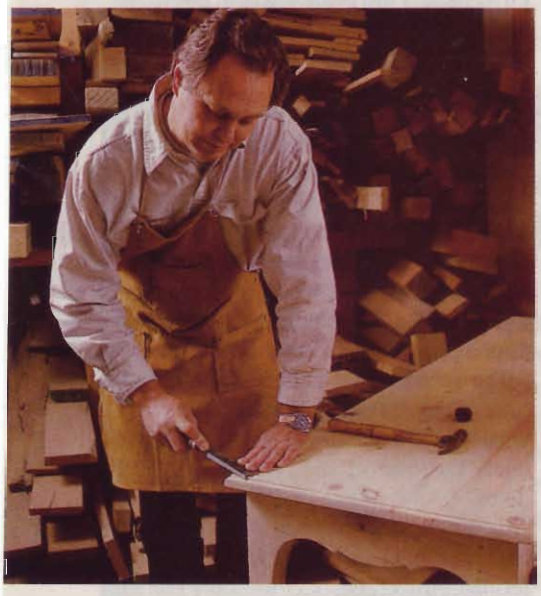
glue tops down and glue panels in place, we'd have horrible disasters. Instead, we use screwing strips and screw tops down. But, we rely on a slightly enlarged hole so that the screw can actually move back and forth with the wood. The head of the screw holds the top in place, but the enlarged hole in the apron allows it to move. Panels, such as on a cabinet door, are always floated.

"We've sent furniture to places all over the country that are much drier than Louisiana," Greg continues. "And no one has ever called to say that a top or panel cracked due to wood movement."

Furniture in distress

Much of the furniture that comes out of Greg's shop looks as old as the pieces they're meant to represent. They've been distressed. And to Greg, the technique has become an art form.

"Distressing has many aspects, and a right way to do each," he says. "First, there's insect damage—powder post beetles, mainly, and in the South, termites." For tell-tale beetle marks, Greg goes after the wood with an awl or ice pick to emulate exit holes, "just a few here and there." To portray once-active termites, he twists a piece of wire and pounds its impression into the surface, then tops it off with an awl hole.



With a chisel, Greg shaves off small areas of a cypress table's machined edge. Finished, it will look centuries old.

"Wood also shrinks and swells constantly. You can't stop it. So wood checks," Greg points out. "We try to limit our checking to where it would normally occur, such as on the end grain and into the flat grain. That's where we scribe in a check mark."

Part of the trick to authentic-looking distressing is to develop a layered effect, Greg believes, as if it happened over the years. "Where we have a worn detail, like an edge that we shaved with a chisel [see the photo *below left*], we come back and bang it with a hammer, like it got nicked years later. We look at the underneath areas, too, what would be the wear points. You want to soften the details because with age, everything gets softer and smoother. But with distressing, you don't want to overdo it, either. You leave some sharp, machined edges, but they have to be where the piece would have been protected."

A finish to fit the climate

In Greg's shop, staining involves aniline dye, as well as water-based and oil-based stains, whatever suits the end result. A favorite there, though, is Minwax Special Walnut. "We use that for what I call our 'Tidewater' finish," he explains. "But whatever stain we put on, it never goes directly on the raw, sanded wood. We first put on a sealer coat of the final finish, Deft Danish Oil. That gives a whole lot more control with how the stain is absorbed. Cypress, for instance, won't get blotchy."

With other hardwoods, the story's a bit different. "After final sanding with 220-grit we go over the piece with a damp cloth to raise the grain, then sand it and seal it before staining," says Greg.

In order to "preserve the character of the wood" Greg prefers a penetrating finish, such as Deft Danish Oil. "It doesn't make the wood look as if it's coated with plastic. And oil really is pretty foolproof, especially when you can have high humidity like we do.

In the finishing room, Tommy Bourg evens out the aniline dye on an armchair with steel wool. The dye gives a rich hue to the wood.

"When it's 100 percent humidity, and it frequently is in summer," he adds, "you can't spray lacquer without getting a blush. Oil is a much slower finishing process, of course, but it's consistent."

Greg generally figures on three to five coats of oil, rubbed in between as needed with #0000 steel wool. "Then we top off the finish with a coat of paste wax to give it a satiny feel," he says. "We experimented with a lot of waxes; ones with a lot of beeswax won't work around here. The hot climate softens it, and it darkens with the humidity. A wax with a high carnauba content works better. It's much harder and has a higher melting point, and to me it provides a smoother finish. Generally, we use Treewax. But to accent distressing, we'll go to a darker tinted wax. It works nicely to fill in the cracks, corners, and the distressing to give the piece the antique character we're looking for."

Written by **Peter J. Stephano**
Photographs: **Michael Taranova; Baldwin Photography**

Greg's got more for you

For a brochure with line drawings of Greg's furniture, send a business-size SASE to: Greg Arceneaux Cabinetmakers, 67230 Industry Lane, Covington, LA 70433. Greg holds monthly weekend workshops for a cost of $250 per student. He also offers Louisiana-style furniture plans, kits, and traditional woods, such as cypress. For details, phone 504/893-8782, or e-mail Gregarceneaux@aol.com.

products that perform

These woodworking wares passed our shop-tested trials

Peerless pressure from 110 volts

To deliver the volume of air needed to drive pneumatic tools, such as dual-action (random-orbit) sanders and spray guns, you need a large-tank, high-voltage, two-stage air compressor, right? That used to be the case, but Porter-Cable's Jetstream line of two-stage, oil-free compressors requires only a 15-amp, 110-volt circuit to do the job.

The CPFC2TV3525VP model I tested stores 25 gallons of compressed air. However, instead of the typical 125 psi top-end pressure, this two-stage model squashes the air twice, up to a maximum of 175 psi. It's like packing 60 gallons of air into a 25-gallon tank.

That factor alone allows you to run high-demand tools longer than a same-sized, single-stage unit. But Porter-Cable engineers also set the cut-in pressure (the pressure at which the compressor begins refilling the tank) at 145 psi—far higher than the 90 psi required by most pneumatic tools.

Porter-Cable Jetstream Compressor

Performance	★★★★★
Price	(CPFC2TV3525VP) **$439**
Value	★★★★★

Call Porter-Cable at 800/487-8665, or on the Internet, visit www.porter-cable.com.

I ran a dual-action sander for more than seven minutes before this compressor could no longer provide the 90 psi to operate the sander. Even simply dumping air out of the tank through my blow gun took 10 minutes before the compressor starved. According to the manufacturer's spec sheet, the CPFC2TV3525VP delivers 5.1 cubic feet of air per minute (cfm) at 90 psi.

Performance issues aside, I also was pleasantly surprised at how quiet the compressor is. Standing right next to the motor, I recorded a 70 decibel (db) reading, and at 10' away the level dropped to 65 db. (A typical shop vacuum runs in the 80–85 db range.)

The upright tank on this model doesn't take up a lot of floor space in the shop, and the large wheels make it easy to move about for those home-enhancing projects on my honey-do list. I can plug it in almost anywhere in the house, and the oil-free design means never having to say, "I'm sorry, I dripped oil on the carpet."

You'll find similarly appointed high-pressure air compressors sold under the Craftsman name at Sears stores. The only difference I found is that the Craftsman model comes with pneumatic tires.

—Tested by Dave Henderson

Make this draft compulsory

The battle against workshop dust continues on many fronts. We deploy shop vacuums for small tools, dust collectors for large tools, and air-filtration units to prevent airborne attacks. Now the folks at Delta have introduced another weapon: the 50-880 Downdraft Table.

The model I tested proffers a 24×24" work surface, surrounded on three sides by a removable curtain that helps confine the dust to the suctionable area. As curtains, though, they look more like vertical blinds. And that's a good thing, because I found I could move oversized workpieces through the hanging strips and still contain the sanding dust to the tabletop.

Delta 58-880 Downdraft Table

Performance	★★★★☆
Price	**$499**
Value	★★★☆☆

Call Delta at 800/438-2486, or on the Internet, visit www.deltamachinery.com.

To see how well this stationary machine works, I sanded a variety of project parts using both random-orbit and belt

Continued on page 82

sanders—two tools with notoriously ineffective dust collection. I was impressed with the suction displayed by this machine, as I could feel air breezing across my hands as I worked.

Rubber grommets rimming some of the holes on the Downdraft Table's work surface prevented marring on the workpieces. They also gripped my workpiece well enough to eliminate the need for additional holddowns, even when using the belt sander. And, at 33" high, the working height was just right when sitting on my tall shop stool, but a tad bit low for use while standing. (I'm 6' tall.)

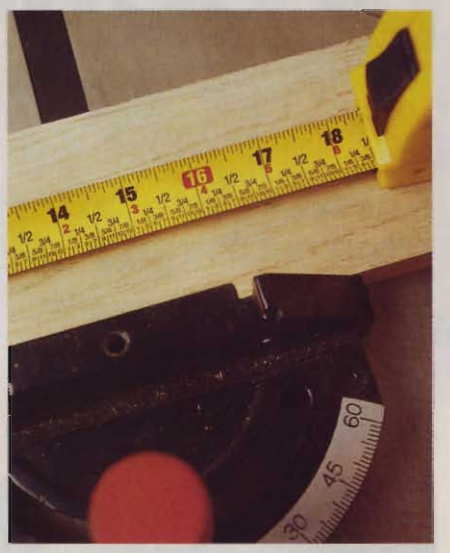
Delta suggests that the 50-880 Downdraft Table also can be used as an ambient air filter when you're not doing tabletop work. Its ½-hp. motor—about twice what you'll find on a typical ceiling-hung air-filtration unit—seems twice as loud, too. But when I used it while running my spindle sander and stationery belt/disc sander, it cleared the air about as well as a ceiling-hung unit.

That helps justify the $499 price tag on the 50-880. If you subtract the cost of an air-filtration unit from that price, you could figure you're only spending $250–300 for the downdraft function. If you routinely work larger pieces, Delta also makes a bigger version, the 50-855, with a 36" square work surface and 1-hp motor that sells for $690.

—Tested by Rich Bright

No more "three ticks past ½"..."

A couple of years ago in a diner, I overheard a bunch of veteran construction workers lamenting how the new guys couldn't look at a measuring tape and tell ⅝" from 1 1/16". Rather than defend the rookies (I'm guilty, too, of using dimensions such as "17 and three ticks past a half"), I held my tongue. But when I saw



EasyPoint 25' Tape

Performance	★★★★★
Price	$9
Value	★★★★★

Call U.S. Tape at 800/472-8273, or visit www.ustape.com.

Continued on page 84

Introducing, the Kreg Jig® K2000 ProPack...

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3X18	.86 ea	4X36	1.35 ea
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the EasyPoint tape, I flashed back to that day and thought, "It's about time."

As you can see in the photo on *page 82*, EasyPoint takes all the guesswork out of measuring. While there are other fractionally marked tapes that identify down to ⅛" increments, this product goes a step further: down to the hard-to-read 1/16ths.

At first, I thought it would be gimmicky, but I quickly became enamored with how nice it is to actually know the exact measurement without having to figure in my head. The 1"×25' nylon-coated tape retracts solidly into its case, and shows the typical markings for studs and trusses.

—Tested by Garry Smith

Locate and lock with a 45° no-slip joint

I've always liked using a lock-miter bit when making 90° joints, such as box or drawer corners. Besides providing more gluing surface, the tongue-and-groove-

style joint keeps the workpieces properly aligned without the hassle of splines or biscuits. Now, you can get that same strength and stability when gluing up eight-sided pieces, with the Sommerfeld 22½° Lock Miter Set.

Sommerfeld 22½° Lock-Miter Set

Performance	★★★★★
Price	$130
Value	★★★☆☆

Call CMT at 888/268-2487, or visit www.cmtusa.com.

The word "set" is key because in a 90° lock-miter joint, you use just one bit to cut both sides of the joint. That geometry doesn't work on a 45° joint, so there are two bits in this set: one to cut the tongue and the other to cut the mating groove.

I had little difficulty setting up the cut, which is designed for ¾" stock. After a few trial-and-error cuts in scrap to center the groove-cutting bit (shown lying on the router table in the photo at *left*), I milled one edge of my eight staves. I then repeated the process with the tongue-cutting bit and milled the opposite edge. The pieces matched perfectly.

Frankly, the occasion to make eight-sided objects just doesn't happen much in my shop, so I can't justify the cost for myself. But, if you want one and need another reason to take the plunge, you also can use this set to make strong edge-to-edge joints in flat panels.

—Tested by Rich Bright

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Hal Taylor, Museum Quality Works of Art, Hartwood, VA

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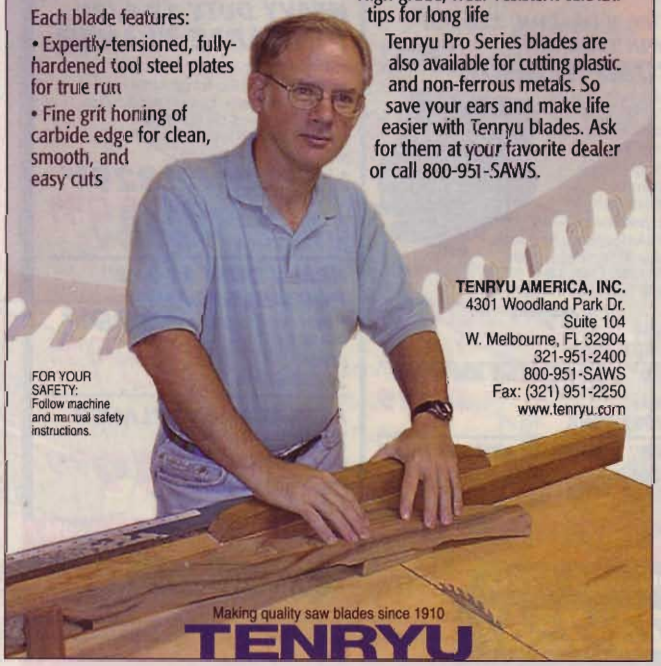

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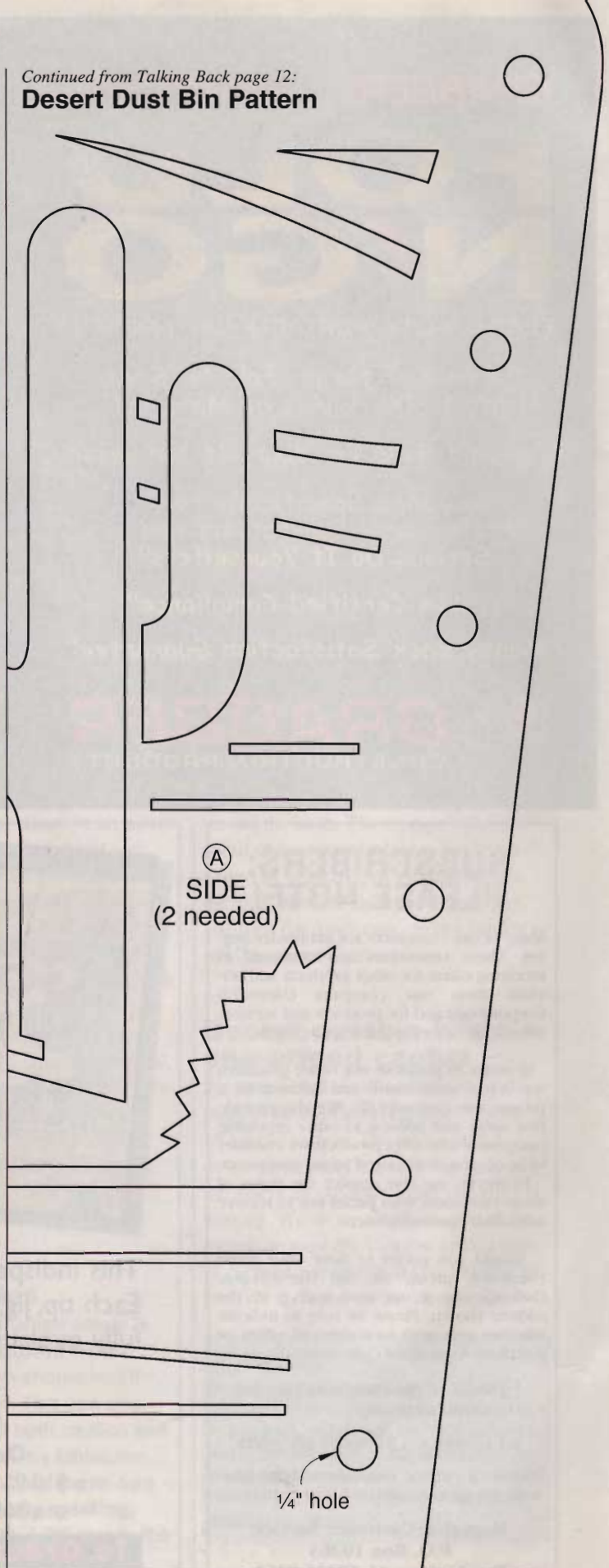
Continued from Talking Back page 12:

Desert Dust Bin Pattern



finishingtouches

PHOTOGRAPHY: RIDGID TOOLS

A Home Depot instructor oversees the operation of a drill press by a woodworking student in a Big Kid's Workshop class at the Escondido, California, Home Depot.

Woodworking workshops debut at Home Depot

The Home Depot company calls it The Big Kid's Workshop, and if you're just getting started in woodworking or want to, it may be perfect for you. In cooperation with Ridgid Tools, Home Depot launched the Saturday woodworking class in September 1999 at its Escondido, California, store.

The four-week long class was the brainchild of Steve Wojtak, a former Escondido Home Depot employee and woodworker who now teaches woodworking for Ridgid Tools. Steve says that the response to the classes was overwhelming. (At the time of this writing, the store was kicking off its 14th class.) "So far, I have received requests for information from 13 other stores that want similar programs," he adds. "Home Depot may soon have the program operating in stores nationwide."

At the Escondido Home Depot, children from 6–11 years of age spend Saturday mornings in the Kid's Workshop. Teenagers and adults take over at 12:30 pm. "We tried to keep the class size to 10 students for safety reasons," Steve says. Because he has moved on to Ridgid to teach woodworking regionally, the program is now run by Hurley Dodd and Dustin Kuhn of Home Depot.

In the classes, students learn to use Ridgid stationary and benchtop tools and portable power tools from other manufacturers. Projects start simply with a birdhouse and get more complex with a display cabinet. And get this, the workshops are totally free of charge. Home Depot absorbs the cost of materials.

While you're at it, check out *WOOD*® magazine's www.woodworkingbasics.com Web site. It supplements the classes perfectly.

Preferred pencil wood

The common "lead" (graphite) pencil was first made in the early 1800s, and the favored wood was eastern red cedar. But by the early 1900s, the supply of large eastern red cedar trees dwindled. Pencil makers turned to incense cedar from the Pacific Northwest. Even though other North American and South American species have been tried, incense cedar still is the world favorite because of its lightness, straight grain, and even texture.

Makers rip nine pencils from each piece of cedar stock, called a slat. Then they're shaped, fitted with graphite, sanded, painted, labeled, and ferruled for the eraser.

Wood collectors convene

If you get excited seeing a big batch of different woods, try to make the International Wood Collectors Society's annual meeting (see "Wood Collecting," *WOOD* magazine, Issue 126, September 2000). It's August 15 through 19 at the Crown American Holiday Inn, Johnstown, Pennsylvania. President Earl Deemer says you can expect informative demonstrations on woodworking and wood and tree identification. There also will be trading of wood samples and field trips. For more information, contact Earl Deemer, RD 1 Box 115, Bolivar, PA 15923; 724/676-4353; e-mail <edeemer@juno.com>. Or visit www.woodcollectors.org.

PHOTOGRAPHY: MIKE JENSEN

Plant a tree, then breathe easy

According to the nonprofit organization, Trees Forever (800/369-1269), a mature tree annually absorbs 10 pounds of air pollutants, the same amount emitted by a car driven 3,600 miles. In fact, scientists have calculated that all of the globe's carbon dioxide is filtered through tree leaves over a 300-year period.

Better Homes and Gardens®
WOOD® PATTERNS®
August 2001 For your woodworking convenience Issue 134

Dear Reader: As a service to you, we've included full-size patterns on this insert for irregular-shaped and intricate project parts. You can machine all other project parts using the Bill of Materials and the drawings accompanying the project you're building.

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PATIO PARTY CENTER See page 34 • **JEWELRY BOX** See page 52
HOUSE SIGN See page 60 • **WALL PLATES** See page 68

RIDGID
TOOLS FOR A LIFETIME

-GANG PLATE PATTERN

for flathead screw
-stlye plate)

ntersunk hole for
d screw (all-wood plate)

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E SIGN
age 60

S SIGN
PATERN

DOUBLE-GANG PLATE PATTERN

WALL PLATES
See page 68

⅛" rabbet ⅛" deep
(mission-style plate)

11/64" countersunk hole for
ovalhead screw (all-wood plate)

⅛" hole for flathead screw
(mission-stlye plate)

¼" chamfers

¼" rabbets ½" deep on back

ion see instructions.

SINGLE
1/8" hole for flathead screw (mission-stlye plate)
1/8" rabbet 1/8" deep (mission-style plate)
11/64" countersunk hole for ovalhead screw (all-wood plate)
WALL PLATES See page 68
1/8" hole (mission
11/64" cou ovalhea
ABCDEF
HIJKLM
OPQRS
PATIO PARTY CENTER
See page 34
1" hole 1/2" deep
33 1/2"
1" hole 1/2" deep
T
HANDLE
(2 needed)
SERVING CART
FULL-SIZE PATTERN
Cut patterns here.
3"
HOUSE
See pa
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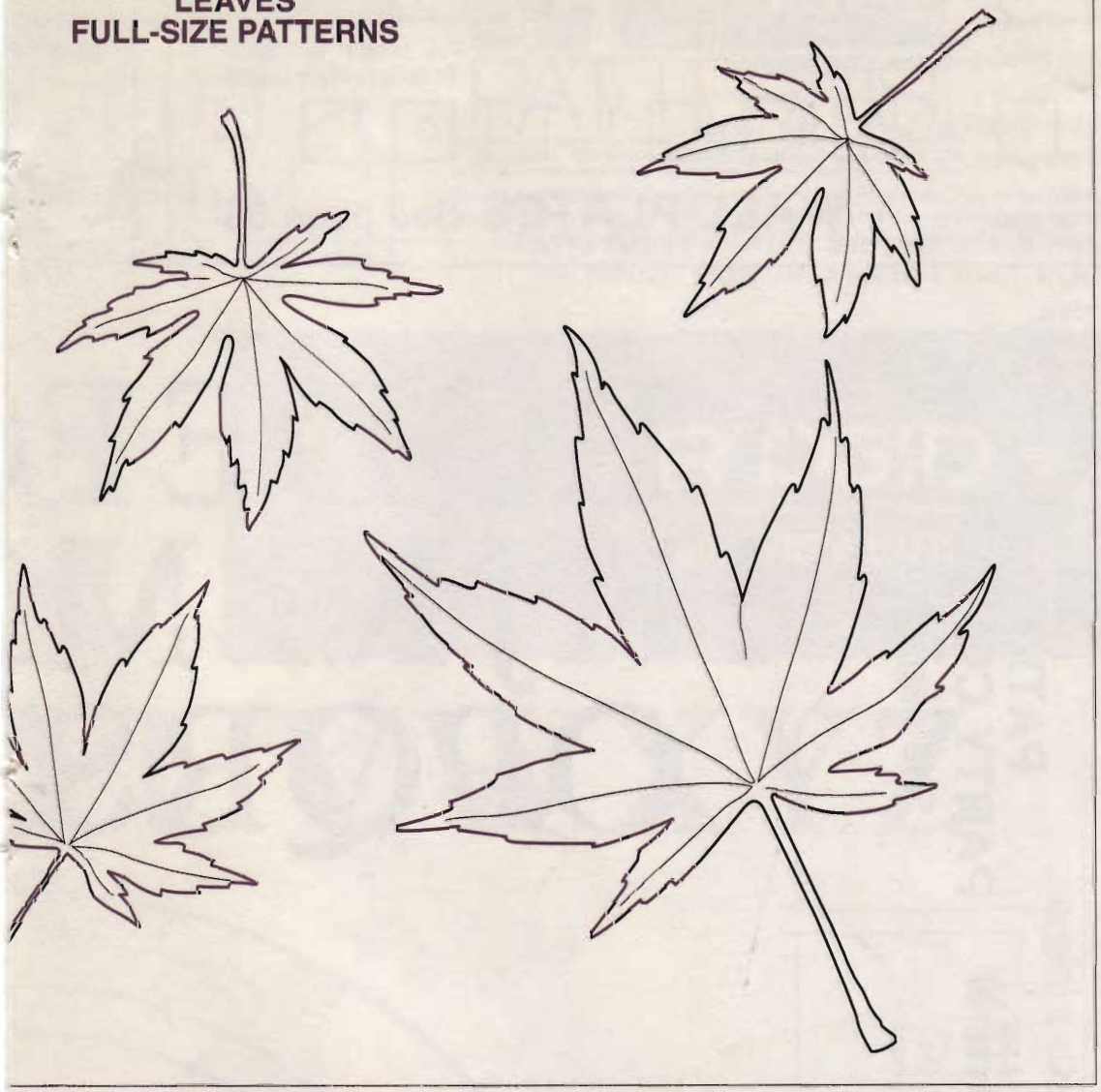
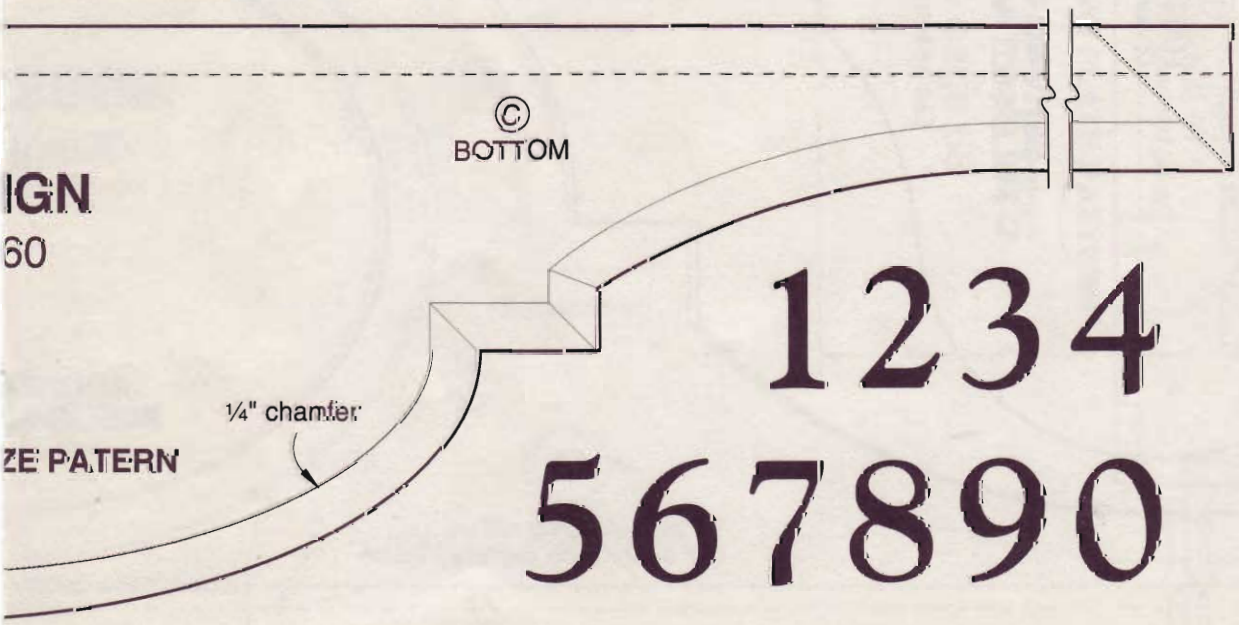
ADDRES
FULL-SIZE
3/8" hole 1/4" deep with a 5/32" shank hole centered inside
To determine dimens

LEAVES
FULL-SIZE PATTERNS





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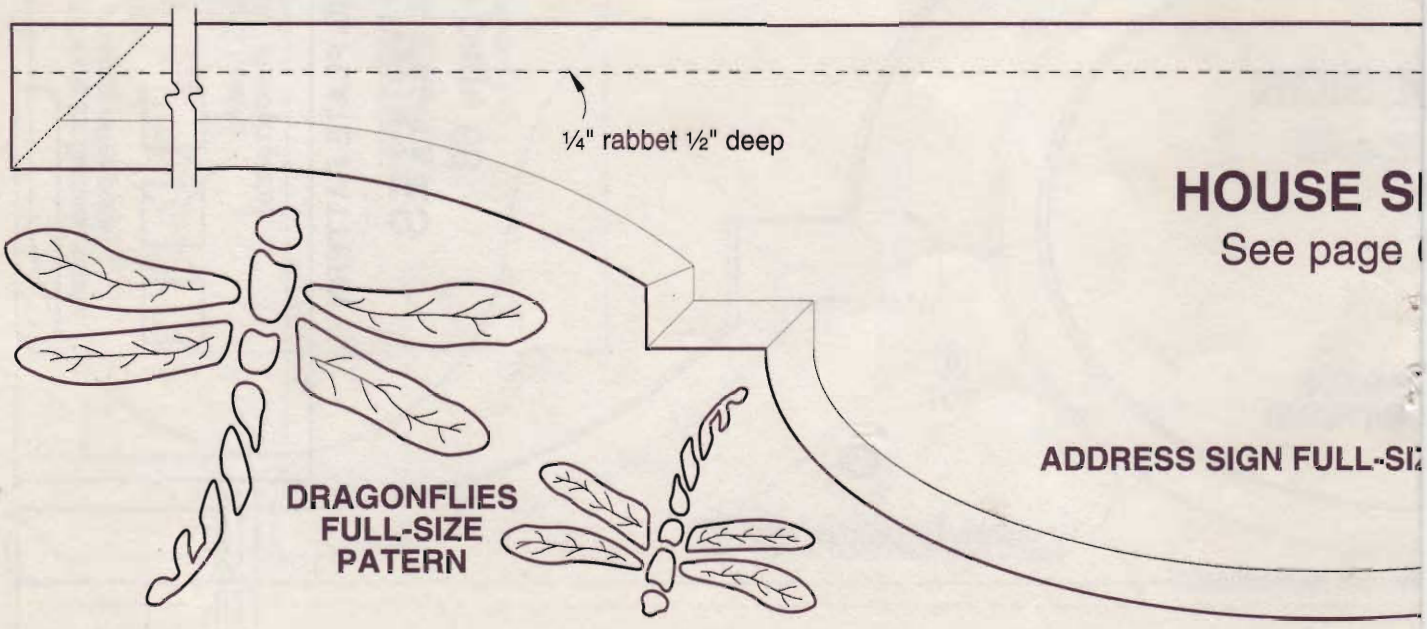
6 3/16 x 13 3/16" copper

JEWELRY BOX

See page 52



HOUSE SI

See page (

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